

Repair Manual Audi TT 2015 ➤

Suspension, Wheels, Steering

Edition 05.2023



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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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General, Technical Data 00 –

General Information

(Edition 05.2023)

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⇒ 1.1 , page 1

⇒ 1.2 , page 1

⇒ T1.3 ypes", page 1

1.1 Chassis

	FWD and AWD					
Front axle McPherson struts with lower control arm, subframe, stabilized or optional Protected by copyright. Copying for private or commercial purposes, ishock absorber with variable damping characteristics						
with Reaf axle orrectness of information	Multi-link suspension with separate spring-shock absorber configuration, stabilizer bar or optional shock absorber with variable damping characteristics					

1.2 Steering

FWD and AWD				
Steering Gear	Electro-mechanically supported, maintenance-free rack-and-pinion steering			

Tire Types 1.3

General information for wheel/tire combination, winter tires, snow chains, recommended tire brands. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44 and ⇒ Wheel and Tire Guide; Rep. Gr. 44.

2 Safety Precautions

- ⇒ P2.1 recautions when Working on Vehicles with Start/Stop System", page 2
- ⇒ P2.2 recautions when Working on Subframe", page 2
- ⇒ P2.3 recautions during Road Test with Testing Equipment", page 2

2.1 Safety Precautions when Working on Vehicles with Start/Stop System

There is a risk of injury due to the engine starting unexpectedly.

The engine may start unexpectedly in vehicles with the Start/ Stop System activated. A message in the instrument cluster indicates whether the Start/Stop System is activated.

Deactivate the Start/Stop System: switch off the ignition.

2.2 Safety Precautions when Working on Subframe

Risk of damaging components authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

If the assembly mounts, steering gear or subframe crossbrace is incorrectly installed, then resting the vehicle on its wheels can damage components.

- Never place the vehicle with loosened suspension components on its wheels.
- Never support the vehicle with loosened suspension components on the subframe or subframe crossbrace.

2.3 Safety Precautions during Road Test with Testing Equipment

There is a risk of injury due to unsecured testing equipment.

If the front passenger airbag deploys during an accident, unsecured testing equipment can become an dangerous projectile.

TT Coupe:

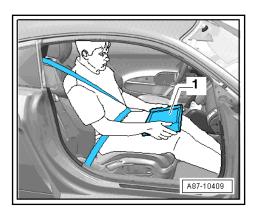
Secure testing equipment on the rear seat.

or

 Have a second person operate testing equipment on the rear seat.

TT Roadster:

- Position the front passenger seat as far back as possible.
- Only use the Vehicle Diagnostic Tester.
- The testing equipment -1- must rest flat on the thighs of the front passenger as shown and be operated by the front passenger.





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3 Repair Information

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- ⇒ T3.15 hreads in Longitudinal Member, Repairing (Subframe to Body)", page 11
- ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11

3.1 General Repair Information

When installing waxed components, contact surfaces must be cleaned. Contact surfaces must be free of wax and grease.

The tightening specifications given apply to non-lubricated bolts and nuts.

Always replace Protegied by Ripyright Copyring to private or commercial purposes, in part or in whole, is not perfectly provided the perfect of the protection of the perfect of the perfe

Always replace the bolts and nuts, which are tightened with an additional turn.

Welding or adjustment procedures are not permitted on loadbearing or wheel-controlling components.

Avoid hammering, welding beads or applying color identification later to coil springs.

Do not perform any welding or grinding (separating work) near the coil springs or suspension struts. Cover coil springs or suspension struts if necessary.

When loosening or removing and installing hydraulic, pneumatic lines or wires, draw sketches or take pictures. This ensures installation is the same as the original.

If the cable ties, brackets or mounting elements were removed during the repair procedure, they must be installed at their original location that corresponds to the series production.

Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Never allow the drive axle to hang loose under the vehicle or to bend them at the joints during repair procedures.

Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If a vehicle must be moved, be sure to note the following:

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 200 Nm.

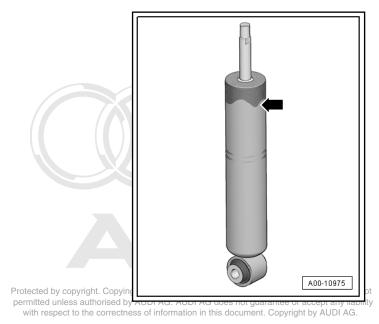
Bonded rubber bushings have a limited range of rotation. For this reason only tighten threaded connections at control arms if vehicle is in curb weight position. Refer to \Rightarrow B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.

- If only the bonded rubber bushing is damaged in components with a bonded rubber bushing, replace the bushing separately if it can be obtained as an original part.
- Replacing an entire component that contains a bonded rubber bushing is only permitted if the base body or the joint, for example, is damaged.

3.2 Shock Absorber Leaks

Shock absorbers are frequently rejected and replaced because of leaks. Examinations on the test stand and on the vehicle have shown that the replacement of a large number of rejected shock absorbers was not justified.

Slight leaking of oil ("sweating") at piston rod seal is no reason to replace a shock absorber. A shock absorber damp with oil is OK under the following circumstances:



i

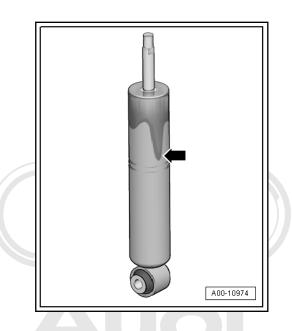
Note

Minor oil excretion is an advantage, since the piston rod oil seal gets lubricated, which thus increases service life. This applies to shock absorbers on the front and rear axles.

- Oil leakage (shaded in illustration -arrow-) is visible, but dull, matte and possibly dry due to dust.
- ◆ One-sided oil or dirt film formation, no dripping.

A shock absorber is not OK under the following circumstances:





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- Dripping -arrow-, completely coated with oil film
- A wet oil film that runs down the pipe indicates a leaky shock absorber. A replacement is required in this instance. Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not

3.3 Shock Absorber Noises

Shock absorbers are frequently rejected and exchanged because of rumbling noises. Examinations on the test stand and vehicle have shown that there was no concern with approximately 70% of the rejected shock absorbers and the replacement was not justified.

In case of complaints that are interpreted as rumbling or knocking sounds, proceed as follows.

Determine with the customer where, when and how the sounds change during a road test on a dry stretch of road with irregularities, if possible.



Note

Shock absorbers are the cause of noises only in the rarest of cases.

Shock Absorbers, Checking when Re-3.4 moved

Defective shock absorbers are noticeable when driving due to loud rumbling noises - a result of wheel hopping - especially on poor stretches of road. Moreover, they can be recognized by a large loss of oil.



Note

Shock absorbers are maintenance-free, shock absorber oil cannot be filled.

A removed shock absorber can be checked by hand as follows:

- Push the shock absorber together by hand.
- The piston rod must move with even resistance throughout the entire stroke and without jerking.

- Release the piston rod.
- For shock absorbers with sufficient gas pressure, the piston rod returns automatically to its starting position.



Note

- If this is not the case, the shock absorber does not necessarily need to be replaced. As long as there is not a large loss of oil, the effectiveness corresponds to that of a standard shock absorber.
- The damping function is also completely available without gas pressure, as long as there is no large loss of oil. However, this can increase the noise level.

3.5 Shock Absorbers, Checking on Shock Tester

Shock absorbers can be checked while installed using the shock tester (shock absorber testing device). The damping effect can be evaluated based on the dial reading or printout.

Special tools and workshop equipment required

- Maha Shock Absorber Tester -VAS 1990S-
- ◆ Suspension Strut Test Bed -VAS 6636-
- ♦ Suspension Strut Test Bed -VAS 6640-

Test Requirements

- Temperature +10 to 40 °C (50 to 104 °F)
- · Driver must be in vehicle.
- · Tire pressure OK
- Drive vehicle straight onto center of wheel contact plates.
- · Front wheels in straight position.
- Parking brake not engaged, foot brake not pressed.

Threshold

Shock absorber condition can only be judged as follows:

Sufficient damping effect

or

Insufficient damping effect



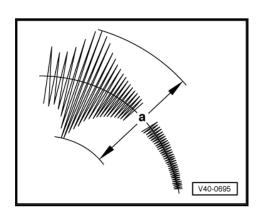
Note

- ♦ Shock absorber test for vehicles with regulated suspension (Audi magnetic ride). Refer to ⇒ Technical Service Handbook (HST).
- Intermediate values for reduced damping performance cannot be read out.
- ◆ A prognosis on service life is not permitted.
- Measured values that occur with the involvement of the sus purposes, in part or in whole, is not pension travel end stops are incorrect sed by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

The following values apply only to the test stands named above. If the specified values are exceeded, the shock absorber

function has weakened enough that a replacement is recommended.

Example:



Threshold = 70

- ♦ a = greater than 70: insufficient damping effect
- ◆ a = less than 70: sufficient damping effect

The shock absorber combination installed in the vehicle is indicated by the corresponding PR number on the vehicle data label.

Production Control Number (PR number) explanation. Refer to ⇒ C2.5 ontrol Number (PR Number) Explanations", page 260.

3.6 Threshold "a" in mm



Note

- ♦ If the readout value is greater than the threshold "a" (table value): insufficient damping effect ⇒ replace shock absorber.
- ♦ If the readout value is less than the threshold "a" (table value): sufficient damping effect ⇒ shock absorber does not need to be replaced.

Vehicle type	Front axle	Rear axle	Note	
Standard suspension 1BA sport suspension with Audi magnetic ride 1BL	in production	in production	no load tank full	
Sport suspension 1BV special sport version 1BD	in production	in production	no load tank full	
Sport suspension with Audi magnetic ride 1BQ / 2MV	in production	in production	no load tank full	

The tires must be "partially loaded" when measuring the tire pressure.

3.7 Guidelines for Clean Working Conditions

 Always clean the connection points and the area around them and then loosen them.

- Place removed parts on a clean surface and cover them so that they do not get dirty. Use foil and paper. Only use lint-free cloths.
- Only install clean parts: remove the replacement parts from their packaging just before installing them.
- Only use greases and sealants that are designated with part numbers.
- Carefully cover or seal opened components if the repair is not performed immediately.

3.8 General Information

Extreme caution, cleanliness, and properly functioning tools are an essential requirement in performing a faultless and successful steering gear repair. Of course the general safety precautions also apply when carrying out repair work.

General information that applies to various different repair procedures is listed here instead of repeating it multiple times throughout the manual. They apply to this repair manual.

3.9 Contact Corrosion

Contact corrosion can occur if incorrect fasteners (bolts, nuts, washers, etc.) are used.

For this reason, only fasteners with a special surface coating may be installed.

Furthermore, only rubber/plastic parts and adhesive made of electrically non-conductive materials are used.

If there are doubts about whether parts can be reused or not, then use new parts. Refer to the Electronic Parts Catalog (ET-KA).

Note:

- The use of original replacement parts is recommended, since they are tested and are compatible with aluminum.
- ♦ The use of Audi accessories is recommended.
- ♦ Contact corrosion damage is not covered under warranty!

3.10 Steering Gear

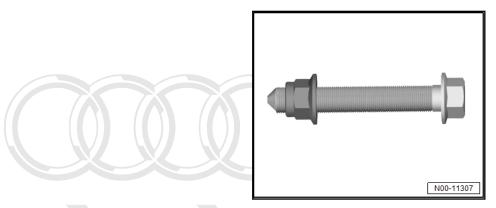
- Always clean the connection points and the area around them and then loosen them.
- When installing the steering gear, make sure the alignment sleeves are correctly positioned between the bracket and steering gear.
- Place removed parts on a clean surface and cover them so that they do not get dirty. Use foil and paper. Only use lint-free cloths.
- ♦ roOnly, install clean parts: remove the replacement parts from pertheir packaging just before installing them nee or accept any liability
- Only use lubricants and sealants marked with part numbers.
- Carefully cover or seal opened components if the repair is not performed immediately.

3.11 Seals and Gaskets

Always replace seals and gaskets.

- Q Audi TT 2015 ➤
- After removing seals, inspect the contact surfaces on housings and shafts for burrs and damage and repair if necessary.
- Remove all sealant residue of fluid seals from the sealing surfaces. Sealant residue must not enter the steering gear housing when doing this.

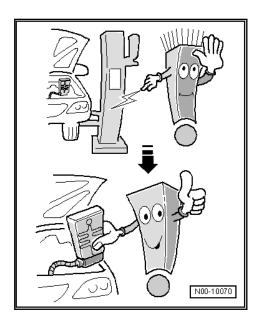
3.12 Bolts and Nuts



- Loosen and tighten the bolts and nuts from the covers and housings diagonally.
- ◆ Do not tilt but rather loosen and tighten particularly sensitive parts (for example, the servo motor with control module) diagonally and in stages cted by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- The tightening specifications given apply to non-lubricated ocument. Copyright by AUDI AG. bolts and nuts.
- ♦ Always replace self-locking nuts and bolts.
- Always replace the bolts and nuts, which are tightened with an additional turn.

3.13 Electrical Components

It is safe to assume that everyone has been shocked at one time or another when coming into contact with a metal object. The reason for this is the build-up of static electricity in the human body. This charge can cause malfunctions when contacting the electrical components for the steering gear.



 Touch a grounded object, such as a water line or a hoist, before working on electrical components. Do not make direct contact with the connector terminals.

3.14 Drive Axle, Repair Information

Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Never allow the drive axle to hang loose under the vehicle or to bend them at the joints during repair procedures.

Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose.

If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Note the following when doing so:

Procedure for loosening the drive axle threaded connection on the wheel side. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105.

Tightening the threaded connection between the drive axle and flange shaft:

First diagonally tighten all six bolts to 10 Nm. Then diagonally tighten them again to the tightening specification.

Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If the vehicle must be moved, be sure to note the following:

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- Install an outer joint in place of the drive axles authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
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- Tighten the outer joint to 200 Nm.

3.15 Damaged Threads in Longitudinal Member, Repairing (Subframe to Body)

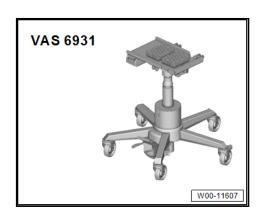
It is possible to service the weld nut threads in the longitudinal member under certain circumstances.

Instructions for repairing damaged threads. Refer to ⇒ Body Repair; Rep. Gr. 50; Suspension Subframe Securing Threads, Servicing.

3.16 Wheel Bearing in Curb Weight Position, Lifting Vehicles with Coil Spring

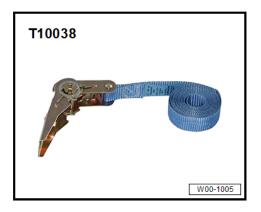
Special tools and workshop equipment required

Engine and Gearbox Jack -VAS 6931-



◆ Tensioning Strap -T10038-

Support Device -VAS 6931/1-, not illustrated

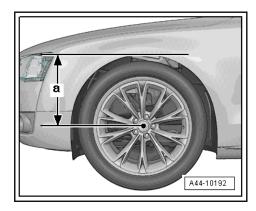




Note

All bolts at suspension parts with bonded rubber bushings must always be tightened in curb weight position (unloaded condi-

- Bonded rubber bushings have a limited range of rotation.
- Axle components with bonded rubber bushings must be brought into the position they will be in when driving before they are tightened (curb weight position).
- Otherwise, the bonded rubber bushing will have tension, which will reduce the service life.
- By raising the corresponding suspension using the Engine in and Gearbox Jack VAS 6931 and Support Device WAS 6931/1-, this position can be simulated on the hoist.
- Before starting the procedure, determine the dimension -a-, for example with tape measure, from the center of the wheel to the lower edge of the wheel housing.





Note

The measurement must be performed in curb weight position (unloaded condition).

Note the measurement. This will be needed when tightening the bolts/nuts.



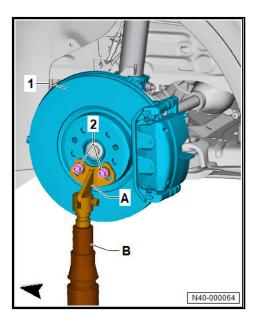
WARNING

Risk of accident!

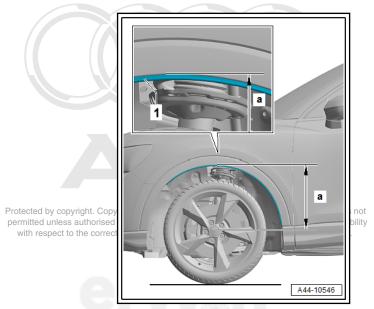
♦ A vehicle that is not secured can slide off the hoist.

Before the applicable suspension is raised, the vehicle must be secured to the hoist lifting arms using Tensioning Straps -T10038-.

Install the Support Device -VAS 6931/1- -item A- to the brake rotor -1- using two wheel bolts -2-.



- Position the Engine and Gearbox Jack -VAS 6931- -item Bon the support device.
- Lift the wheel bearing housing, until the dimension -a- has been reached.



Tightening of the applicable bolts/nuts must only occur if the dimension -a- that was measured before starting the procedures

has been attained between the center of the wheel hub and the lower edge of the wheel housing.



WARNING

Risk of accident!

- ♦ Do not lift or lower vehicle with the engine and gearbox jack still under the vehicle.
- Do not leave the Engine and Gearbox Jack -VAS 6931under the vehicle any longer than necessary.
- Tighten the applicable bolts and nuts.
- Lower the wheel bearing housing.
- Pull the Engine and Gearbox Jack -VAS 6931- out from
- under the vehicle Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not Remove the Support Device 148 693 171 AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Technical Data 4

⇒ 4.1 , page 15

⇒ 4.2 , page 15

4.1 Chassis

		FWD and AWD	
Wheelbase	mm	2595 (102.17 in.)	
Front/rear track width. Refer to 1)	mm	1555 (61.22 in.)/1526 (60.08 in.)	

¹⁾ Front/rear track width, applies only to standard suspension with standard tires 205/55/R16 on 7.0Jx16 ET40 rims.

4.2 Steering

FWD and AWD				
Maximum wheel turning angle	Protected by copyright. Copying for private o Approximately 40°			

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5 Disposal

⇒ G5.1 as-Filled Shock Absorbers, Venting and Draining", page

⇒ G5.2 as-Filled Shock Absorbers, Venting and Draining", page 18

Front Gas-Filled Shock Absorbers, 5.1 Venting and Draining

⇒ G5.1.1 as-Filled Shock Absorbers, Venting and Draining, Standard Shock Absorber", page 16

⇒ G5.1.2 as-Filled Shock Absorbers, Venting, Audi magnetic ride Shock Absorber", page 17

5.1.1 Front Gas-Filled Shock Absorbers, Venting and Draining, Standard Shock **Absorber**

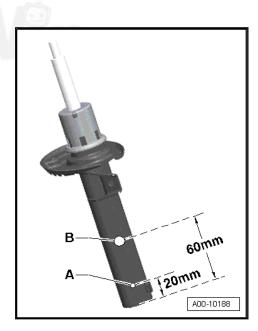
Special tools and workshop equipment required

- Hand drill
- 3 mm diameter drill bit.
- 6 mm diameter drill bit
- Oil collecting container
- Protective Eyewear

Procedure

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Secure the gas-filled shock absorber vertically in a vise, with piston rod facing down.





WARNING

There is a risk of eye injury.

Wear protective eyewear while drilling.

Drill a 3 mm hole -arrow A- through the shock absorber outer tube



Note

Gas escapes when drilling.

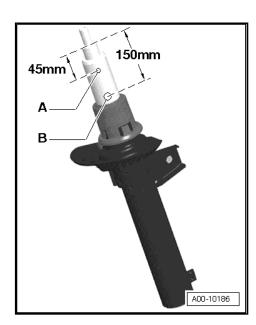
- Continue drilling until the tube inside is drilled through (approximately 25 mm (0.98 in.) deep).
- Drill a second 6 mm hole -arrow B- through the outer and inner shock absorber tubes.
- Hold the shock absorber over a suitable container for catching oil and move the piston rod repeatedly over the entire stroke until no more oil flows out.
- 5.1.2 Front Gas-Filled Shock Absorbers, ercial purposes, in part or in whole, is not Venting, Audi magnetic ride Shock Aborbers december or accept any liability sorber.

Special tools and workshop equipment required

- Hand drill
- ♦ 3 mm thread tap
- ♦ 6 mm thread tap
- ♦ Oil collecting container
- ♦ Protective Eyewear

Procedure

Clamp the magnetic ride shock absorber vertically in the vise.





WARNING

There is a risk of eye injury.

♦ Wear protective eyewear while drilling.

Drill a 3 mm hole -arrow A- through the shock absorber outer tube.



Note

Gas escapes when drilling.

- Drill a second 6 mm hole -arrow B- through the shock absorber outer tube.
- Hold the shock absorber over a suitable container for catching oil and move the piston rod repeatedly over the entire stroke until no more oil flows out.

5.2 Rear Gas-Filled Shock Absorbers, Venting and Draining



Note

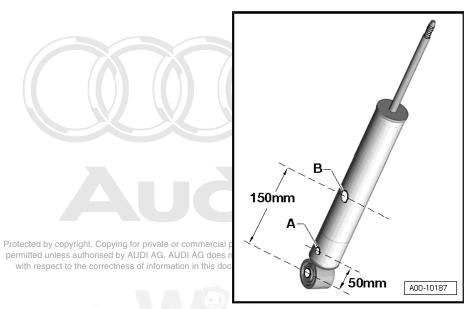
The procedure is the same for standard shock absorbers and Audi magnetic ride shock absorbers.

Special tools and workshop equipment required

- Hand drill
- 3 mm thread tap
- 6 mm thread tap
- Oil collecting container
- Protective Eyewear

Procedure

Secure the gas-filled shock absorber vertically in a vise, with piston rod facing down.





WARNING

There is a risk of eye injury.

- ♦ Wear protective eyewear while drilling.
- Drill a 3 mm hole -arrow A- through the shock absorber outer tube.



Note

Gas escapes when drilling.

- Continue drilling until the tube inside is drilled through (approximately 25 mm (0.98 in.) deep).
- Drill a second 6 mm hole -arrow B- through the outer and inner shock absorber tubes.
- Hold the shock absorber over a suitable container for catching oil and move the piston rod repeatedly over the entire stroke until no more oil flows out.

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40 – Front Suspension

1 Front axle

⇒ L1.1 ocation Overview - Front Axle", page 20

1.1 Component Location Overview - Front Axle

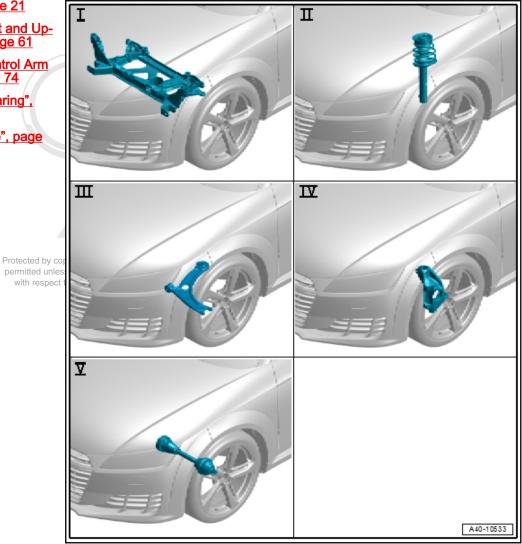
I - Refer to ⇒ 2 , page 21

II - Refer to ⇒ S3 trut and Upper Control Arm", page 61

III - Refer to ⇒ C4 ontrol Arm and Ball Joint", page 74

IV - Refer to <u>⇒ B5 earing",</u> page 91

V - Refer to <u>⇒ A6 xle", page</u> 101



2 Subframe

- ⇒ -2.1 Subframe", page 21
- ⇒ S2.2 ecuring", page 24
- ⇒ L2.3 owering", page 27
- ⇒ w2.4 ithout Steering Gear, Removing and Installing", page 33
- ⇒ w2.5 ith Steering Gear, Removing and Installing", page 38
- ⇒ S2.6 ervicing", page 46
- ⇒ B2.7 ar, Removing and Installing", page 58
- ⇒ R2.8 od, Removing and Installing", page 59

2.1 Overview - Subframe



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1 - Bolt

Tightening specification. Refer to \Rightarrow Rep. Gr. 10; Assembly Mounts; Overview - Assembly Mounts.

2 - Lower Bonded Rubber **Bushing for Pendulum Sup**port

□ Replacing. Refer to ⇒ S2.6 ervicing", page

3 - Bolt

Always replace after removing



Caution

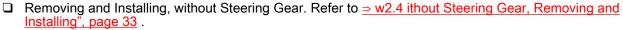
There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosenéd or tightened with an impact wrench.

Allways install all bolts by hand for the first few turns.

□ 20 Nm +180°

4 - Subframe

- Securing. Refer to ≥ S2.2 ecuring", page
- □ Lowering. Refer to ⇒ L2.3 owering", page 27



□ Removing and Installing, with Steering Gear. Refer to ⇒ w2.5 ith Steering Gear, Removing and Installing", page 38.

5 - Bolt

Always replace after removing

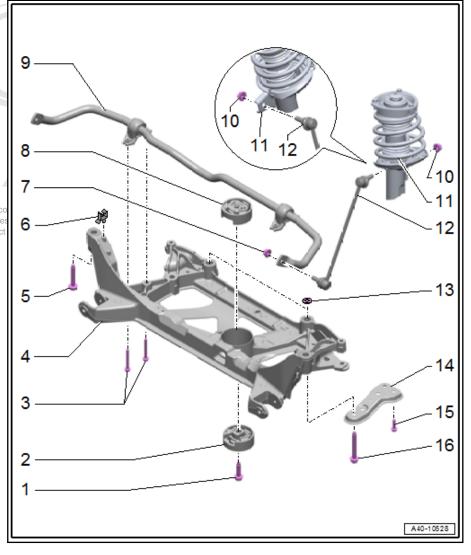


Caution

There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosened or tightened with an impact wrench.

Allways install all bolts by hand for the first few turns.

□ 70 Nm + 180°



6 - Not Installed

- ☐ When tightening, counterhold on the joint pin internal multi-point bolt
- □ Always replace after removing
- □ 65 Nm

8 - Upper Bonded Rubber Bushing for Pendulum Support

□ Replacing. Refer to ⇒ S2.6 ervicing", page 46.

9 - Stabilizer Bar with Rubber Bushings

☐ Removing and Installing. Refer to ⇒ B2.7 ar, Removing and Installing", page 58.

10 - Nut

- ☐ When tightening, counterhold on the joint pin internal multi-point bolt
- □ Always replace after removing
- □ 65 Nm

11 - Suspension Strut

Removing and Installing. Refer to ⇒ S3.2 trut, Removing and Installing", page 63.

12 - Coupling Rod

☐ Removing and Installing. Refer to ⇒ R2.8 od, Removing and Installing", page 59.

13 - Intermediate Plate

☐ Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).

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with respect to There are different versions Refer to the Blectronic Parts Catalog (ETKA) for allocation.

15 - Bolt

□ Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

The subframe bolts on the body must not be loosened or tightened with an impact wrench.

Always install all bolts by hand for the first few turns.

■ 20 Nm +90°

16 - Bolt

□ Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

The subframe bolts on the body must not be loosened or tightened with an impact wrench.

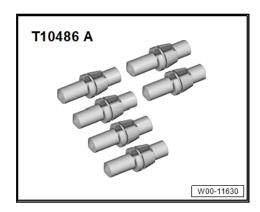
Always install all bolts by hand for the first few turns.

□ 70 Nm + 180°

2.2 Subframe, Securing

Special tools and workshop equipment required

Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- from Assembly Tool, Sub-frame Alignment -T10486A-



Engine and Gearbox Jack -VAS 6931-



Procedure

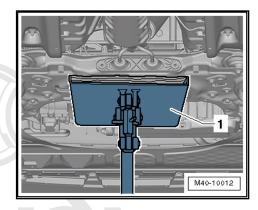
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Remove the noise insulation. Refer to & Body Exterior Rep AUDI AG does not guarantee or accept any liability Gr. 66: Noise Insulation: Noise Insulation: Refer to Bernauffer Remarked Insulation in this document. Copyright by AUDI AG. Gr. 66; Noise Insulation; Noise Insulation, Removing and Installing.

Applies to Audi TT Roadster

Remove the front diagonal braces. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Diagonal Braces, Removing and Installing.

Applies to all



- Position the Engine and Gearbox Jack -VAS 6931- -1- under the subframe.
- If necessary, clean the threads on the Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/eb-by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of inform

A40-10640



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

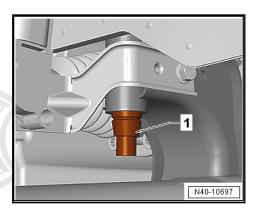
- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- ♦ Always install all bolts by hand for the first few turns.
- Loosen the bolts -2, 3, 4 and 5- for the supports -arrows-.



Note

- To secure the subframe, the Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1- must be installed one after the other at positions -1, 6, 7 and 8-.
- The locating pins must only be tightened to a maximum of 20 Nm or else the locating pin threads will be damaged.

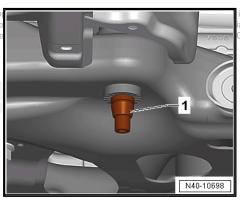
Front Subframe, Securing



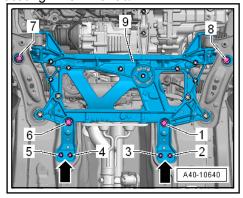
Replace the bolts on both sides of the vehicle with Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1--item 1- and tighten to 20 Nm.

Rear Subframe, Securing





- Remove the support bolts, the subframe bolt and then remove the support.
- Insert the Subframe Alignment Assembly Tool Kit-Locating Pins -T10486/1- -1- and tighten to 20 Nm.
- Repeat this procedure on the opposite side.
- The subframe has been secured when the bolts -1, 6, 7 and 8- have been replaced by Subframe Alignment Assembly Tool Kit-Locating Pins -T10486/1-



The subframe position is now secured.

Subframe Alignment Assembly Tool Kit-Locating Pins -T10486/1-, Removing

Removal is performed in the reverse order. Note the following:

 Always only remove one locating pin and replace it with a new bolt.



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- ♦ Always install all bolts by hand for the first few turns.
- A road test must be performed after completing repairs. If steering wheel is crooked, the wheels must be aligned. Refer to <u>⇒ A2 lignment</u>", page 256.

Tightening Specifications

- Refer to ⇒ -2.1 Subframe", page 21
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- ◆ Diagonal braces. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.

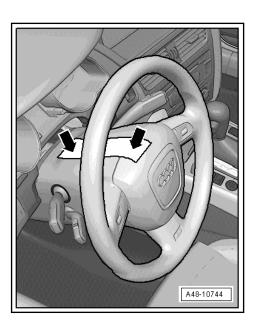
2.3 Subframe, Lowering

Procedure



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- Turn the steering wheel in the straight position.
- Switch the ignition off and open the driver door so the steering wheel lock engages.
- Secure the steering wheel in the straight-ahead position using adhesive tape -arrow- so that it does not turn.





Note

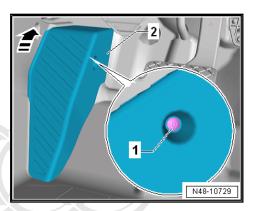
- Be sure to use adhesive tape that will not leave behind any residue when it is removed.
- Be careful not to turn the steering wheel during the repair because the Airbag Spiral Spring/Return Spring with Slip Ring -F138- can become damaged.

LHD vehicle



Remove the nuts -arrows- and the footwell trim panel.

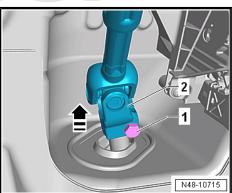
RHD vehicles



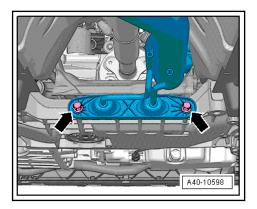
- Remove the footrest. Refer to ⇒ Body Interior; Rep. Gr. 70; Vehicle Interior Trim Panels; Footrest, Removing and Instal-
- Fold back the carpet.

Continuation for all vehicles

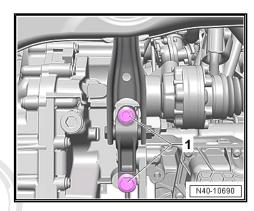
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- Remove the bolt -1- and remove the universal joint -2- from the steering gear in the direction of -arrow-.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Noise Insulation, Removing and Installing.
- Remove the bolts -arrows- from the exhaust pipe bracket.



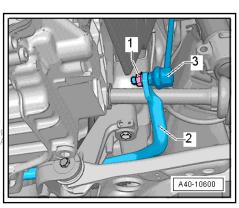
- Remove the bolts -1- for the pendulum support.



Remove the left and right nut -1- from the coupling rod -3-. Refer to \Rightarrow R2.8 od, Removing and Installing", page 59.

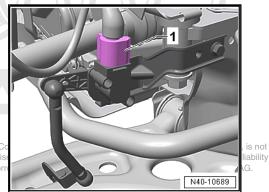


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Remove the coupling rod -3- from the stabilizer bar -2- on the left and right sides.

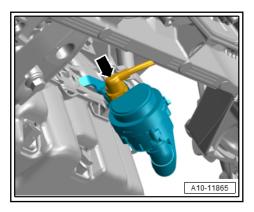
Applies to vehicles with a level control system sensor



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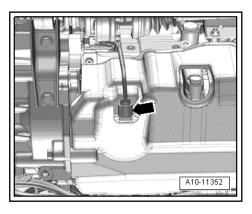
Disconnect the left and right connector -1- from the front level control system sensor.

Applies to Vehicles with TDI Engine



Disconnect the connector -arrow- from the Heater Support Pump -V488-.

Applies to all



Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free up the wire from the subframe.

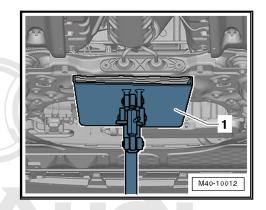


Note

There are different versions depending on the engine.

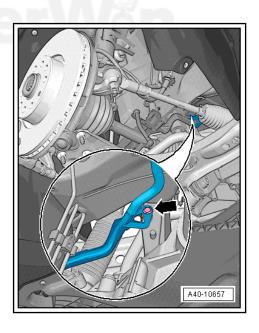
- Secure the subframe. Refer to ⇒ S2.2 ecuring", page 24.
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS 6931- -item 1-.



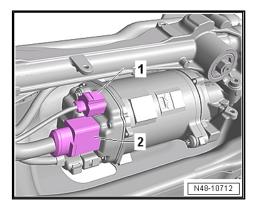


Be careful not to overstretch the wire for the steering and permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Consider by AUDI AG. with respect to the correctness of information in this document. Copyright by AUDI AG.

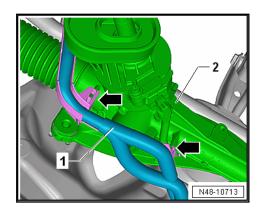
- Free up the cable guide from the subframe by removing the expanding clip -arrow-.



LHD vehicle

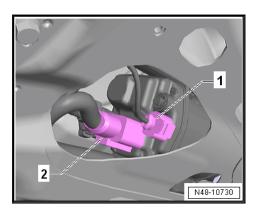


- Disconnect the connectors -1 and 2- from the steering gear.
- Unclip the cable holders -arrows- from the steering gear.

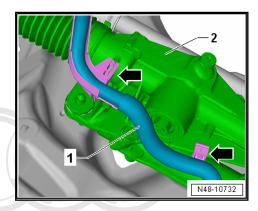


- Unclip all other cable clips on the steering gear.

RHD vehicles



- Disconnect the connectors -1 and 2- from the steering gear.
- Unclip the wiring harness -1- from the steering gear -2--arrows-.



Continuation for all vehicles

- Lower the subframe a maximum of 100 mm (3.94 in.).

Installing

Install in the reverse order of removal while noting the following:

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- Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.
- After placing the steering gear onto the universal joint, make sure that the seal -Item 13- <u>⇒ Item 13 (page 301)</u> on the steering gear contacts the assembly plate without kinks and seals the opening to the footwell correctly. Water leak and/or noises may be the result.
- Make sure sealing surfaces are clean.



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- ◆ Always install all bolts by hand for the first few turns.
- Remove the Subframe Alignment Assembly Tool Kit-Locating Pins -T10486/1-. Refer to ⇒ page 26
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257

Tightening Specifications

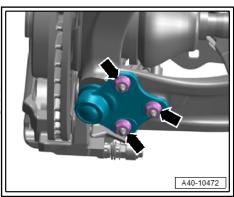
- Refer to ⇒ -2.1 Subframe", page 21
- Refer to ⇒ -2.1 Steering Column", page 286
- Refer to ⇒ Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.

2.4 Subframe without Steering Gear, Removing and Installing

Removing



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Subframe is removed together with the control arms.

- Remove the front wheels. Refer to <u>⇒ a1 nd Tires</u>", page <u> 255</u> .
- Mark the left and right ball joint installation position at the nuts -arrows- using a felt-tip pen.
- Remove the left and right nuts.
- Remove the control arm from the ball joint and then turn ball joint forward to take the load off the control arm.



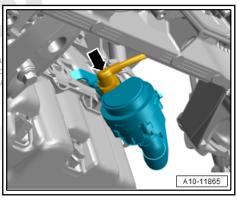
Note

Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.

Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Noise Insulation, Removing and Installing.

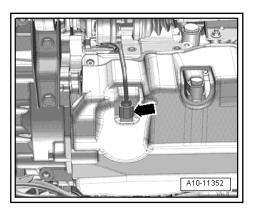
Applies to Vehicles with TDI Engine

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Disconnect the connector -arrow- from the Heater Support Pump -V488-.

Applies to all

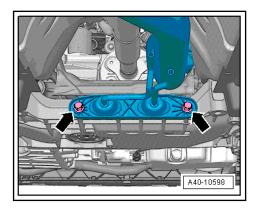


Disconnect the connector for the Oil Level Thermal Sensor -G266- -arrow- and free up the wire from the subframe.

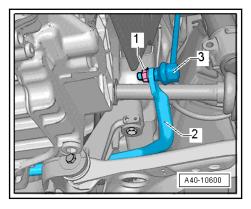


There are different versions depending on the engine.

- Remove the bolts -arrows- from the exhaust pipe bracket.



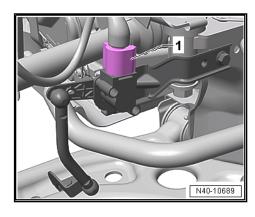
Remove the left and right nuts -1- from the coupling rod -3-. Refer to \Rightarrow R2.8 od, Removing and Installing", page 59



Remove the left and right coupling rod from the stabilizer bar

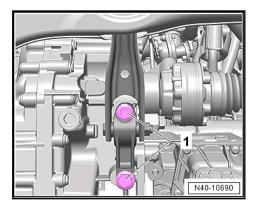
Applies to vehicles with a level control system sensor



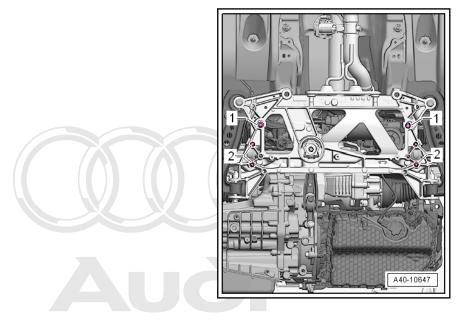


Disconnect the left and right connector -1- from the front level control system sensor.

Applies to all



- Remove the bolts -1- for the pendulum support.
- Remove the bolts -1- for the steering gear.

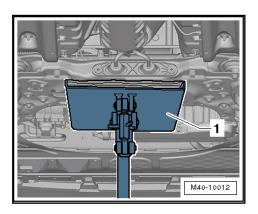




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Ignore -item 2-.

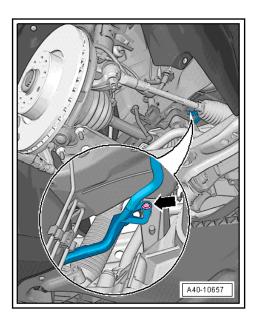
- Pry the steering gear out of the subframe alignment sleeves.
- Secure the subframe. Refer to ⇒ S2.2 ecuring", page 24.
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS 6931- -item 1-.





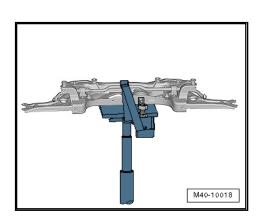
Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

Free up the cable guide from the subframe by removing the expanding clip -arrow-.



- Secure the steering gear to the body.
- Secure the subframe to the Engine and Gearbox Jack -VAS 6931- with the accompanying strap.





Installing

Install in the reverse order of removal while noting the following:



There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- Always install all bolts by hand for the first few turns.
- Install the ball joints. Refer to ⇒ J4.4 oint, Removing and Installing", page 87

Evaluate if an axle alignment is needed. Refer to <u>⇒ f2.2 or</u> Axle Alignment, Evaluating", page 257.

Tightening Specifications

- ♦ Refer to ⇒ -2.1 Subframe", page 21
- Refer to ⇒ -3.1 Steering Gear", page 299
- Refer to ⇒ -2.1 Steering Column", page 286
- Refer to ⇒ Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- ◆ Refer to ⇒ a1 nd Tires", page 255

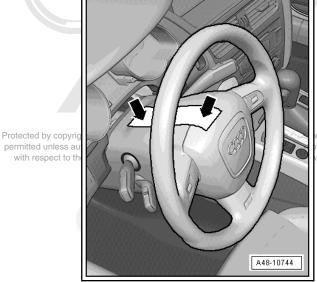
2.5 Subframe with Steering Gear, Removing and Installing

Special tools and workshop equipment required

◆ Puller - Ball Joint -3287 A-



Removing



ot any liability NUDI AG.

- Turn the steering wheel in the straight position.
- Switch the ignition off and open the driver door so the steering wheel lock engages.

Secure the steering wheel in the straight-ahead position using adhesive tape -arrow- so that it does not turn.



Note

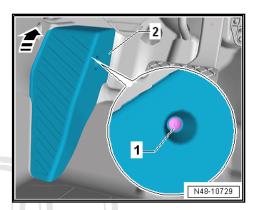
- Be sure to use adhesive tape that will not leave behind any residue when it is removed.
- Be careful not to turn the steering wheel during the repair because the Airbag Spiral Spring/Return Spring with Slip Ring -F138- can become damaged.

LHD vehicle



- Remove the nuts -arrows- and the footwell trim panel.

RHD vehicles



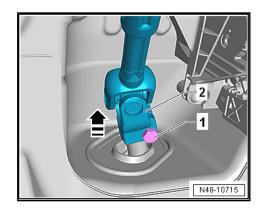
- Remove the footrest. Refer to ⇒ Body Interior; Rep. Gr. 70; Vehicle Interior Trim Panels; Footrest, Removing and Instal-
- Fold back the carpet.



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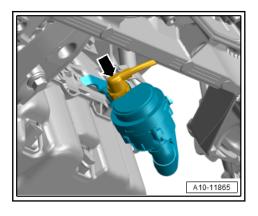


Continuation for all vehicles



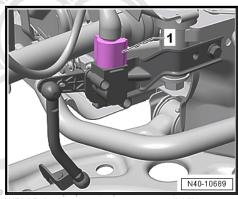
- Remove the bolt -1- and remove the universal joint -2- from the steering gear in the direction of -arrow-.
- Remove the front wheels. Refer to ⇒ a1 nd Tires", page
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Noise Insulation, Removing and Installing.

Applies to Vehicles with TDI Engine



Disconnect the connector -arrow- from the Heater Support Pump -V488-.

Applies to vehicles with a level control system sensor

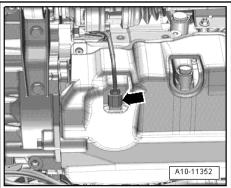


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Disconnect the left and right connector - 14 from the front thes of information in this document. Copyright by AUDI AG. level control system sensor.

Applies to all





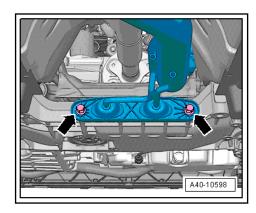
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not Disconnect the connector for the ObjLevel Disconnect or accept any liability -G266--arrow-wand free up-the wire from the subframe. Copyright by AUDI AG.



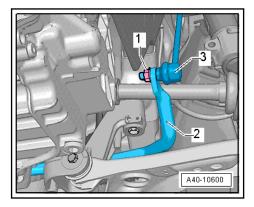
Note

There are different versions depending on the engine.

- Remove the bolts -arrows- from the exhaust pipe bracket.

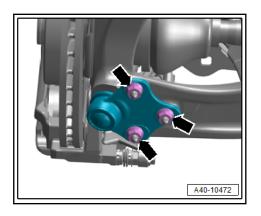


Remove the left and right nuts -1- from the coupling rod -3-. Refer to ⇒ R2.8 od, Removing and Installing", page 59.



- Remove the left and right coupling rod from the stabilizer bar
- Mark the left and right ball joint installation position at the nuts -arrows- using a felt-tip pen.





- Remove the left and right nuts.
- Remove the control arm from the ball joint and then turn ball joint forward to take the load off the control arm.

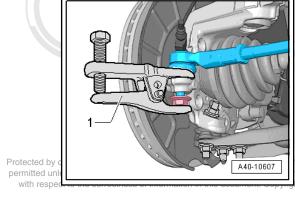


Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.



Note

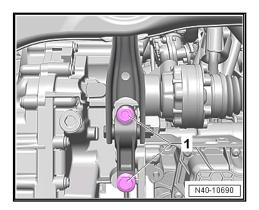
To protect the thread, screw the nut on the pin several turns



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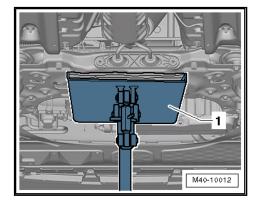
- Loosen the nuts from the tie rod end, but do not remove yet.
- Press off the tie rod end from the wheel bearing housing using the Puller - Ball Joint -3287A- -item 1- and then remove the nut.
- Remove the bolts -1- for the pendulum support.





- Secure the subframe. Refer to ⇒ S2.2 ecuring", page 24.
- Slightly lower the subframe with the Engine and Gearbox Jack -VAS 6931- -item 1-.

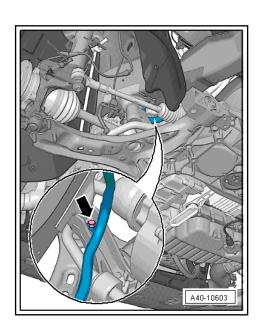




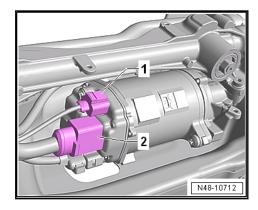
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Be careful not to overstretch the wire for the steering and the Oil Level Thermal Sensor -G266-.

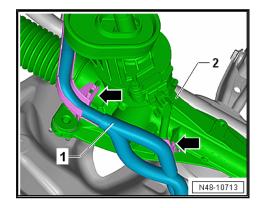
Free up the cable guide from the subframe by removing the expanding clip -arrow-.



LHD vehicle



- Disconnect the connectors -1 and 2- from the steering gear.
- Unclip the cable holders -arrows- from the steering gear.

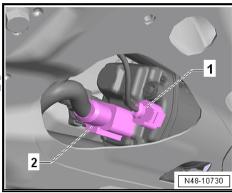


- Unclip all other cable clips on the steering gear.

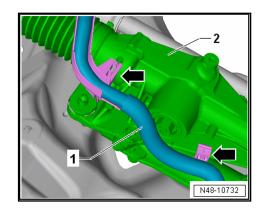
RHD vehicles



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- Disconnect the connectors -1 and 2- from the steering gear.
- Unclip the wiring harness -1- from the steering gear -2--arrows-.

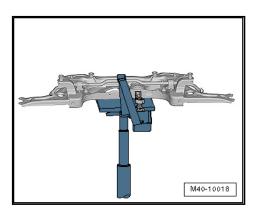


Continuation for all vehicles

- Slightly lower the subframe. Pay attention to the wires while doing this.
- Lower the Engine and Gearbox Jack -VAS 6931- slowly while guiding the steering gear wiring harness.
- Secure the subframe to the Engine and Gearbox Jack -VAS 6931- with the accompanying strap.



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Installing

Install in the reverse order of removal while noting the following:



Note

- Coat the seal on the steering gear with lubricant such as soft soap before installing the steering gear.
- After placing the steering gear onto the universal joint, make sure that the seal -ltem 13- ⇒ Item 13 (page 301) on the steering gear contacts the assembly plate without kinks and seals the opening to the footwell correctly. Water leak and/or noises may be the result.
- Make sure sealing surfaces are clean.



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- Always install all bolts by hand for the first few turns.

- Install the ball joints. Refer to ⇒ J4.4 oint, Removing and Installing", page 87
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257

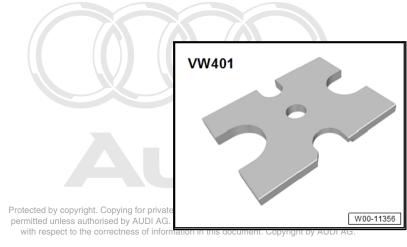
Tightening Specifications

- Refer to ⇒ -2.1 Subframe", page 21
- Refer to ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- Refer to ⇒ -2.1 Steering Column", page 286
- Refer to ⇒ -3.1 Steering Gear", page 299
- Refer to ⇒ Transmission; Rep. Gr. 34; Assembly Mounts; Overview - Assembly Mounts.
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- ◆ Refer to ⇒ a1 nd Tires", page 255

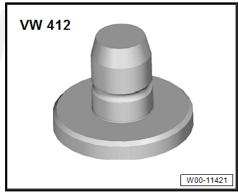
2.6 Subframe, Servicing

Special tools and workshop equipment required

- Safety Gloves
- Protective headgear with visor
- Press Plate -VW401-



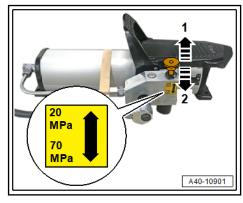
Press Piece - Multiple Use -VW412-



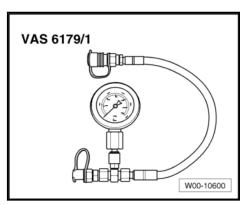
♦ Hydraulic Press -VAS 6178-



◆ Pneumatic/Hydraulic Foot Pump -VAS 6179-



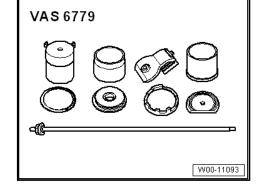
Pneumatic/Hydraulic Foot Pump - Pressure Gauge -VAS 6179/1-



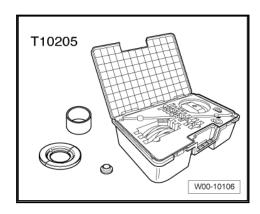
Hydraulic Press - Bushing Tool Kit -VAS 6779- with Support Ring - Assembly Device Kit -VAS 6779/11- or Hydraulic Press - Bushing Tool Kit -VAS 6779 A-



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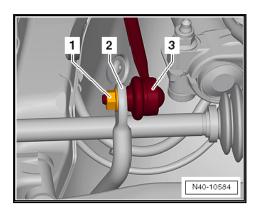


Bearing Installer - Wheel Hub/Bearing Kit - Pressure Head -T10205/13- from the Bearing Installer - Wheel Hub/Bearing Kit -T10205A-



Replacing the bonded rubber bushing for the pendulum support.

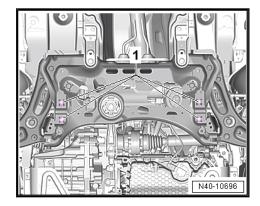
- Remove the pendulum support. Refer to ⇒ Engine Mechanical; Rep. Gr. 10; Assembly Mounts; Pendulum Support, Removing and Installing.
- Remove the left and right nuts -1- from the coupling rod -3to do so counterhold with a four-point socket on the threaded



- Remove the left and right coupling rod from the stabilizer bar
- Remove the bolts -1- for the stabilizer bar.



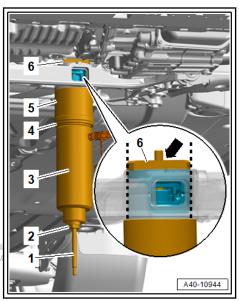
Leave the stabilizer bar in the installation position on the Venice ted by copyright. Copying for private or commercial purposes, in part of in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



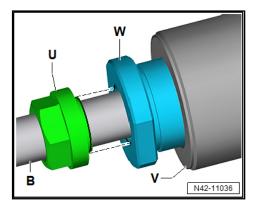
Bonded Rubber Bushing, Pressing Out



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- Position the special tool as shown:
- Rubber Bushing Assembly Device Kit Threaded Rod -VAS 6779/2-
- 2 Rubber Bushing Assembly Device Kit Hexagon Nut -VAS 6779/3-
- 3 Hydraulic Press -VAS 6178- with Bearing Installer Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
- 4 Rubber Bushing Assembly Device Kit Thrust Piece -VAS 6779/5-
- 5 Rubber Bushing Assembly Device Kit Tube -VAS 6779/4-
- 6 Position the Hydraulic Press Bushing Tool Kit -Thrust Piece -VAS 6779/1- -item 1- with the flat side -arrow- in the direction of travel on the bonded rubber bushing.
- Position the tool exactly flush in alignment of the bonded rubber bushing, to prevent tilting.
- Pay attention that the Rubber Bushing Assembly Device Kit -Hexagon Nut -VAS 6779/3- is seated correctly.



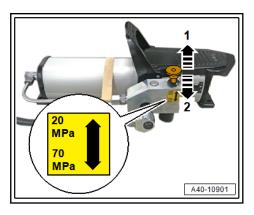
 The guide from the Hexagon Nut -VAS 6779/3- -U- must be seated in the Bearing Installer - Wheel Hub/Bearing Kit -Thrust Piece -T10205/13- -W-

- The Hexagon Nut -VAS 6779/3- -U- must be installed flush on the Bearing Installer - Wheel Hub/Bearing Kit -Thrust Piece -T10205/13- -W-.
- Connect the special tools as shown.





- Hydraulic Press -VAS 6178-1 -
- 2 -Pneumatic/Hydraulic Foot Pump - Pressure Gauge -VAS
- Pneumatic/Hydraulic Foot Pump -VAS 6179-
- Pull the control knob on the pressure relief valve for the Pneumatic/Hydraulic Foot Pump -VAS 6179- to level -1-.



The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2-(700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

Never set the pressure greater that the specified (position 1 = 20 MPa).

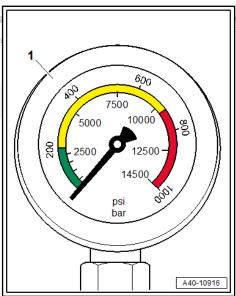


DANGER!

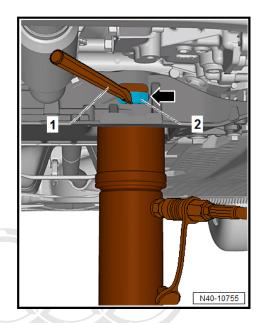
Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

- · Wear safety gloves.
- · Wear protective headgear with a visor.
- Pay attention when operating the foot pump, to not push the switch button in the lower position.
- Carefully operate the Pneumatic/Hydraulic Foot Pump -VAS 6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge -VAS 6179/1-item 1-.





- Make sure that the indicator stays in the green display area.
 Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Press out both bonded rubber bushings until the upper bonded rubber bushing -2- is visible in the pendulum support opening -arrow- in the subframe.

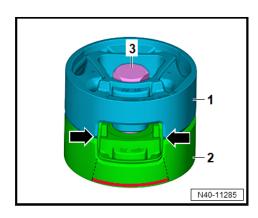


- Perform a visual inspection of the upper bonded rubber bushing outer race -2-.
- If the upper bonded rubber bushing outer race -2- is deformed, it must be destroyed through the opening for the pendulum support -arrow- in the subframe.
- Using a chisel or similar tool -1-, make a break in the upper bonded rubber bushing outer race -2-.
- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not

 This work sequence is necessary to prevent tilting of the rised by AUDI AG. AUDI AG does not guarantee or accept any liability bonded rubber bushing outer race in the area of the penductness of information in this document. Copyright by AUDI AG. lum support opening in the subframe.
- Completely press out both bonded rubber bushings at the same time.

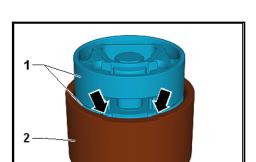
If the procedure does not work with the pressure specified, the repair setup must be checked. Submit feedback if necessary.

Preparing bonded rubber bushings before pressing in

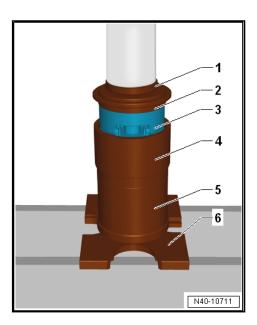


- Place the bonded rubber bushings -1 and 2- on top of each other so the openings -arrows- lay directly over each other.
- Tighten the bonded rubber bushings with the original bolts
 -3- hand tight.
- Apply the med marking in phases as shown on the illustration. Dimension of the phase approximately 1 mm.
- Place the bonded rubber bushing -1- with the bolt head facing up in the larger diameter of the Hydraulic Press -Bushing Tool Kit - Funnel -VAS 6779/6- -2-.

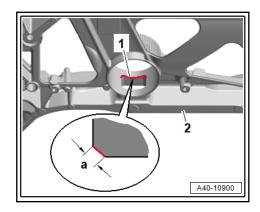
N40-10710



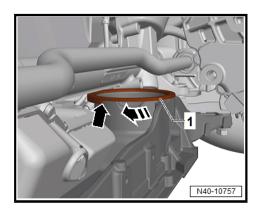
- Align the boded rubber bushing in the Hydraulic Press -Bushing Tool Kit Funnel -VAS 6779/6-.
- The bonded rubber bushing opening -arrows- must lay exactly in the recess on the Hydraulic Press Bushing Tool Kit Funnel -VAS 6779/6-.
- Position the special tool as shown:



- 1 Press Piece Multiple Use -VW412-
- 2 Rubber Bushing Assembly Device Kit -Thrust Piece -VAS 6779/5-, the side with the letter "A" points upward
- 3 Bonded Rubber Bushing
- 4 Rubber Bushing Assembly Device Kit Funnel -VAS 6779/6-
- 5 Rubber Bushing Assembly Device Kit Tube -VAS 6779/4-
- 6 Press Plate -VW401-
- Press the bonded rubber bushing in the Rubber Bushing Assembly Device KitpyFunnel/PVAS 6779/6-mitem 4-pall theat or in whole, is not way on the Rubber Bushing Assembly Device Kitro Thruste or accept any liability Piece -VAS 6779/5- item 2-.
- Deburr the edge -1- at the top in the opening for the pendulum support in the subframe -2- as shown with a file to the dimension -a-.



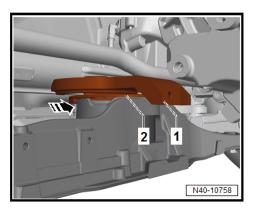
- Dimension -a- = 1 mm.
- Turn the Support Ring -VAS 6779/11- -item 1- in the direction of the -arrow- so that the tab -left arrow- points to the

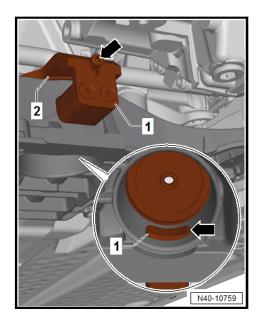


Position the Counterholder -VAS 6779/7- -item 1- from the left onto the Support Ring -VAS 6779/11- -item 2- in the direction of the -arrow-.



Position the Insert -VAS 6779/7-1A- - item 1- in the opening -lower arrow- for the pendulum support in the subframe at the same time push the insert -item 1- all the way upward and tighten using the bottomper arrow! purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.





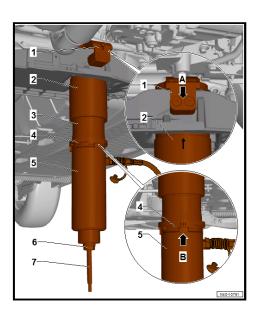
Make sure that the Insert -VAS 6779/7-1A- is seated correctly in the pendulum support opening in the subframe.

Bonded Rubber Bushing, Pressing In

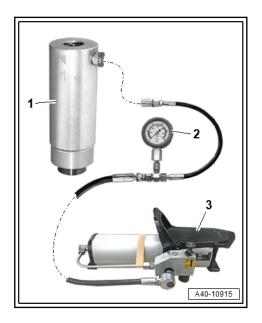


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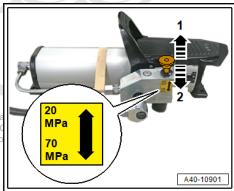
- Remove the pendulum support from the boded rubber bush-
- Install the Hydraulic Press Bushing Tool Kit -Threaded Rod -VAS 6779/2- -item 7- in the Rubber Bushing Assembly Device Kit - Counterhold -VAS 6779/7- -item 1-.
- Position the special tool as shown:
- Rubber Bushing Assembly Device Kit Counterhold -VAS 1 -6779/7-
- Hydraulic Press Bushing Tool Kit Funnel -VAS 6779/6-, -arrow marking- on the funnel must be opposite of both bolts in the center -arrow A-.
- Rubber Bushing Assembly Device Kit Thrust Piece -VAS 3 -6779/9-
- 4 -Incremental Ring -VAS 6779/8-, the marking -III- on the incremental ring must point toward the cam -arrow B- on the Thrust Piece -VAS 6779/9-.



- Hydraulic Press -VAS 6178- with Bearing Installer Wheel 5 -Hub/Bearing Kit- Adapter 13 -T10205/13-
- 6 -Rubber Bushing Assembly Device Kit - Hexagon Nut -VAS
- Rubber Bushing Assembly Device Kit Threaded Rod -VAS 6779/2-
- Connect the special tools as shown.



- 1 -Hydraulic Press -VAS 6178-
- 2 -Pneumatic/Hydraulic Foot Pump - Pressure Gauge -VAS 6179/1-
- 3 -Pneumatic/Hydraulic Foot Pump -VAS 6179-
- Pull the control knob on the pressure relief valve for the Pneumatic/Hydraulic Foot Pump -VAS 6179- to level -1-.



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The control knob must be in the position -1-. The setting is a maximum pressure of 200 bar (2,900.76 psi). In position -2-(700 bar (10,152.66 psi)) the nominal load of the spindle is exceeded.



Caution

Risk of destroying components due to the pressure setting being too high.

Never set the injection pressure greater that the specified (position 1 = 20 MPa).

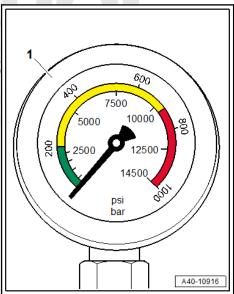


DANGER!

Risk of personal injury and property damage caused by the spindle breaking or the assembly tool deforming. Uncontrolled flying broken pieces possible.

- Wear safety gloves.
- Wear protective headgear with a visor.
- Pay attention when operating the foot pump, to not push the switch button in the lower position.
- Carefully operate the Pneumatic/Hydraulic Foot Pump -VAS 6179- while monitoring the pressure indicator on the Pneumatic/Hydraulic Foot Pump - Pressure Gauge -VAS 6179/1--item 1-.





- Make sure that the indicator stays in the green display area. Do not exceed the maximum permitted pressure of 200 bar (2,900.76 psi).
- Press in both bonded rubber bushings at the same time.
- To prevent damage to the bonded rubber bushing outer race, while pushing in, pay attention that it is not tilted at the beginning.
- If necessary, release the tension and press in using the Pneumatic/Hydraulic Foot Pump -VAS 6179-.



Caution

Risk of destroying components due to the pressure setting being too high.

- Never select the foot pump mode with the higher pressure.
- If the pressing in does not work with the pressure specified, the repair setup must be checked.
- Remove special tool from the subframe and check seating of the pressed in bonded rubber bushing.

Further installation is performed in reverse order of the removal.

Tightening Specifications

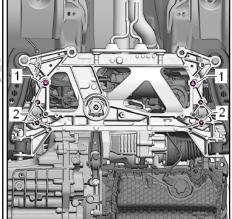
- Refer to ⇒ Motor; Rep. Gr. 10; Assembly Mounts; Overview -Assembly Mounts.

2.7 Stabilizer Bar, Removing and Installing

Removing



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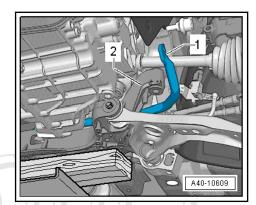
- Lower the subframe. Refer to ⇒ L2.3 owering", page 27.
- Remove the bolts -2- for the stabilizer bar.



Note

Ignore -item 1-.

Lift up the stabilizer bar -1- from the subframe and remove forward over the bracket -2-.



Installing

Install in the reverse order of removal while noting the following:

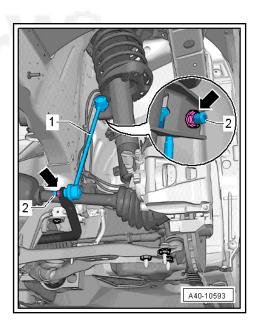
- Install the subframe. Refer to ⇒ L2.3 owering", page 27.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

Tightening Specifications

♦ Refer to ⇒ -2.1 Subframe", page 21

2.8 Coupling Rod, Removing Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not and installing by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the confectness of information in this document. Copyright by AUDI AG.

Removing



- Remove the wheel. Refer to <u>⇒ a1 nd Tires</u>", page 255.
- Remove the nuts -arrows- from the coupling rod -1- by counterholding with a multi-point socket on the threaded pin -2- if necessary.
- Remove the coupling rod -1- from the stabilizer bar and pull out the suspension strut.

Installing

Install in the reverse order of removal while noting the following:

 Tighten the nuts -arrows- for securing the coupling rod on the suspension strut or tighten the stabilizer bar. Counterhold with a multi-point socket on the threaded pins -2- to do this.



The counterhold tool must not be tilted.

Tightening Specifications

- Refer to ⇒ -2.1 Subframe", page 21
- Refer to <u>⇒ a1 nd Tires</u>", page 255



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3 Suspension Strut and Upper Control Arm

- ⇒ -3.1 Suspension Strut and Upper Control Arm", page 61
- ⇒ S3.2 trut, Removing and Installing", page 63
- ⇒ S3.3 trut, Servicing", page 69
- ⇒ S3.4 trut, Lowering", page 71
- 3.1 Overview Suspension Sfrut and Mall of commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability per Control Arm/ith respect to the correctness of information in this document. Copyright by AUDI AG.

If the components of the front axle (axle components and/or wheel rim) are replaced if damaged, the tightening specifications on the following threaded connections must be checked, when these threaded connections are not replaced during the repair procedure.

 Test torque 100 Nm for suspension strut clamping screw -ltem 5- ⇒ ltem 5 (page 62) and nut -ltem 7- ⇒ ltem 7 (page 62)

Until the testing torque is reached in the tightening direction turning of the connection is not permitted.

1 - Cap

Shock absorber component

2 - Spring Support

■ Note the installation position

3 - Shock Absorber with Lower Spring Plate

- ☐ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- □ Removing and Installing. Refer to = S3.3 trut, Servicing".
 Protection of the page 100 permitted unless authorised by AUD
- ☐ If the shock absorbers of is replaced due to a bent piston rod, the tie rod end on this side of the vehicle must be replaced with it.
- Because of different shock absorber valve systems, only install new shock absorbers from the same manufacturer on both axles, if possible.

4 - Electric Connection

For the suspension strut with electronic damping (Audi magnetic ride)

5 - Bolt

- Always replace after removing
- □ 70 Nm + 180°

6 - Wheel Bearing Housing

7 - Nut

Always replace after removing

8 - Protective Cover

9 - Coil Spring

- ☐ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Surface of spring coil may not be damaged
- ☐ Removing and Installing. Refer to ⇒ S3.3 trut, Servicing", page 69.

10 - Deep-Groove Ball Bearing

11 - Stop Buffer

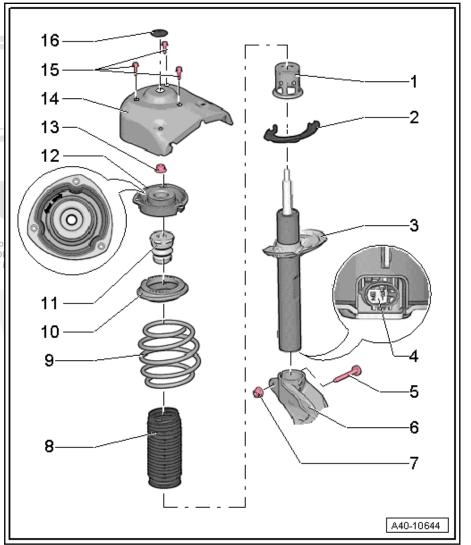
- □ Delivered with shock absorber -item 3-.
- Not available separately.

12 - Strut Mount

☐ Note the installation position, one of the two marks -arrows- on the spring plate must point in the direction of travel. Refer to ⇒ page 68.

13 - Nut

Always replace after removing

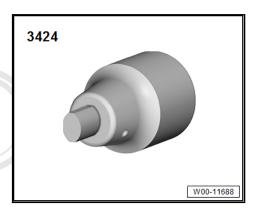


- □ 60 Nm
- 14 Suspension Strut Tower
- 15 Bolt
 - □ Always replace after removing
 - ☐ 15 Nm +90°
- 16 Cover

3.2 Suspension Strut, Removing and Installing

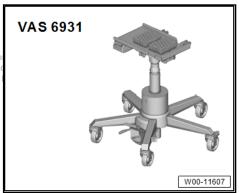
Special tools and workshop equipment required

♦ Spreader Tool -3424-



♦ Engine and Gearbox Jack -VAS 6931-

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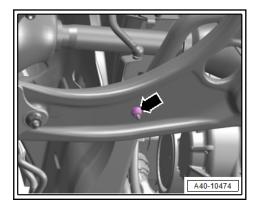


◆ Support Device -VAS 6931/1-, not illustrated

Removing

- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Bulkhead; Plenum Chamber Cover, Removing and Installing.
- Loosen drive axle bolt on the wheel hub. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105.
- Remove the wheel. Refer to <u>⇒ a1 nd Tires</u>", page <u>255</u>.

Applies to vehicles with a level control system sensor

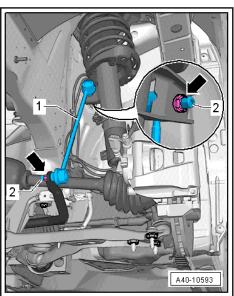


Remove the nut -arrow- and free up the level control system sensor coupling rod from the control arm.

Applies to all



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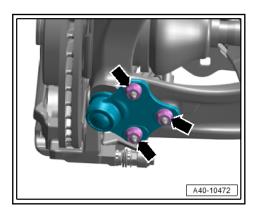


Remove the coupling rod -1- nut -arrow- from the suspension strut. Refer to ⇒ R2.8 od, Removing and Installing", page 59.

Applies to the right side of the vehicle

Remove the right drive axle. Refer to ⇒ A6.4 xle, Removing and Installing", page 108.

Applies to the left side of the vehicle



- Mark the installation position of the left ball joint at the nuts -arrows- using a felt-tip pen.
- Remove the nuts on the left side.
- Remove the control arm from the ball joint and then turn ball joint forward to take the load off the control arm.



Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.

- Lower the suspension strut on vehicles with sport suspension. Refer to ⇒ S3.4 trut, Lowering", page 71. If the vehicle does not have sport suspension, the suspension strut must not be lowered.
- Pull the wheel hub off the drive axle outer joint.



Note

If the components cannot be separated, press the drive axle out of the wheel bearing. Refer to ⇒ A6.4.3 xle, Pressing out of Wheel Bearing", page 115.

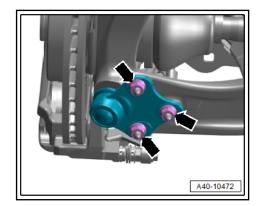


Caution

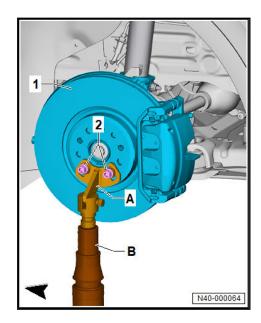
There is a risk of damaging a drive axle that is hanging down by over bending the inner joint.

Secure the drive axle to the body using a wife real purposes, in part or in whole, is not permitted unless authorised by AUDLAG AUDLAG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDLAG.

Continuation for Both Sides

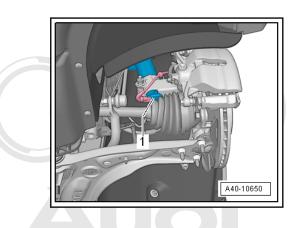


- Attach the ball joint to the control arm again by installing the nuts -arrows- hand-tight.
- Install the Support Device -VAS 6931/1- -item A- to the brake rotor -1- using two wheel bolts -2-.



Applies to vehicles with electronic damping (Audi magnetic

Disconnect the connector -1- and free up the wire on the suspension strut.





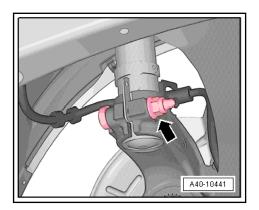
Note

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not Remove the connector with both hands. Use one hand to open nless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability the lock (retainer) and use the other hand to press it off. Do not use tools.

All Vehicles:

Disconnect the threaded connection for the wheel bearing housing/suspension strut -arrow-.

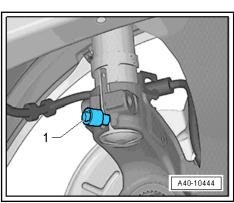




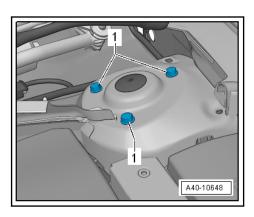
Insert the Spreader Tool -3424- -1- into wheel bearing housing slot.



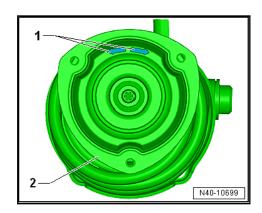
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- Turn the ratchet 90° and remove it from the Spreader Tool -3424-.
- Press the brake rotor toward the suspension strut by hand, otherwise the shock absorber tube may become tilted in the hole of wheel bearing housing.
- Pull the wheel bearing housing downward from the shock absorber tube and lower using the Engine and Gearbox Jack
 -VAS 6931- until the shock absorber tube hangs freely.
- Tie up the wheel bearing housing with a wire on the bracket/subframe.
- Remove the Engine and Gearbox Jack -VAS 6931- from under the wheel bearing housing.
- If the suspension strut was not lowered, remove the bolts -1for the spring plate and remove the suspension strut.



Installing



Install in the reverse order of removal, while noting the following:

- One of the two arrows -1- on the spring plate -2- must point in the direction of travel.
- Insert the wheel hub in the drive axle outer joint.
- Insert the wheel bearing housing with the ball joint into the control arm.
- Install the ball joint. Refer to ⇒ J4.4 oint, Removing and Installing", page 87

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostical ted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- OBD-capable systems
- 14 Electronic Damping Control Module -J250
- 14 Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257

Tightening Specifications

- ⇒ -3.1 Suspension Strut and Upper Control Arm", page 61
- ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- ⇒ -2.1 Subframe", page 21
- ⇒ -2.1 Front Level Control System Sensor", page 250

- ⇒ -6.1.1 Drive Axle, Bolted to Transmission", page 101
- ◆ ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105
- ♦ ⇒ a1 nd Tires", page 255

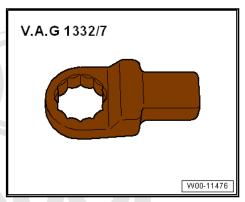
3.3 Suspension Strut, Servicing

Special tools and workshop equipment required

◆ Torque Wrench, 40-200Nm -V.A.G 1332A-



 Torque Wrench 1332 Insert - Ring Wrench - 21mm -V.A.G 1332/7-

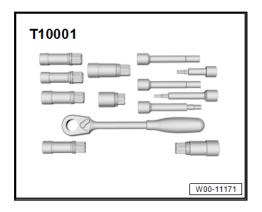


♦ Spring Compressor Kit -V.A.G 1752-



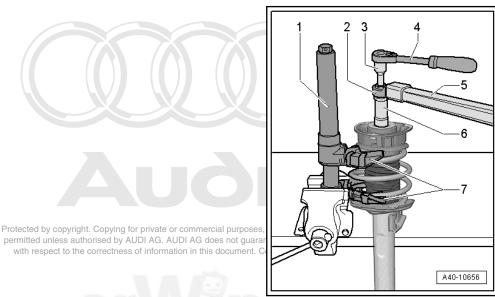
W00-11699

Shock Absorber Set -T10001-



Removing

- Suspension strut is removed. Refer to ⇒ S3.2 trut, Removing and Installing", page 63
- Pretension the coil spring using the Spring Compressor Kit Spring Tensioner -V.A.G 1752/1- until the upper deepgroove ball bearing is free.
- Remove the hex nut from the piston rod.
- Remove the individual components of the suspension strut and coil spring with the Spring Compressor Kit - Spring Tensioner -V.A.G 1752/1-.



- permitted unless authorised by AUDI AG. AUDI AG does not guara
- Spring Compressor Kit Spring Tensioner -V.A.G 1752/1-
- 2 -Torque Wrench 1332 Insert - Ring Wrench - 21mm - V.A.G 1332/7-
- 3 -Shock Absorber Set - Extension SW7 -T10001/8-
- Commercially Available Ratchet 4 -
- 5 -Torque Wrench, 40-200Nm -V.A.G 1332A-
- Shock Absorber Set Socket -T10001/5-6 -
- 7 -Spring Compressor Kit - Spring Retainer w/Inserts -V.A.G 1752/4-

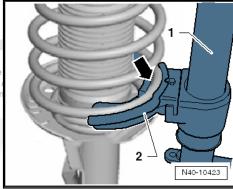


WARNING

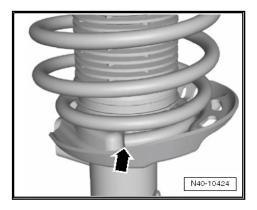
First pretension the spring enough so that tension is relieved on upper spring plate.

Make sure the coil spring -arrow- fits correctly inside the Spring Compressor Kit - Spring Retainer w/Inserts - V.A.G 1752/4- -item 2-.





Installing



- Place coil spring with Spring Compressor Kit Spring Tensioner -V.A.G 1752/1- on lower spring support.
- The end of the spring coil must rest against the stop -arrow-.
- Tighten the new nut on the piston rod. Refer to \Rightarrow -3.1 Suspension Strut and Upper Control Arm", page 61
- Relieve the tension on the Spring Compressor Kit Spring Tensioner -V.A.G 1752/1- and remove it from the coil spring.
- Install the suspension strut. Refer to ⇒ S3.2 trut, Removing and Installing", page 63.

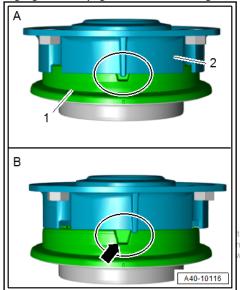
3.4 Suspension Strut, Lowering

The suspension strut must be lowered on the following sport suspensions, if the wheel bearing unit/wheel bearing housing is removed from the drive axle.

Sport suspension 2UC and sport suspension with Audi magnetic ride 2MV

Note

There is a risk of damaging the deep-groove ball bearing -1-.



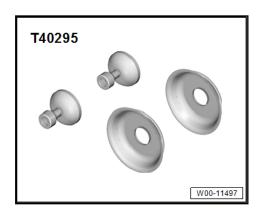


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- If the suspension strut is not lowered on the above-mentioned sport suspensions when removing the wheel bearing unit/wheel bearing housing from the drive axle and the suspension strut is pulled outward, the deep-groove ball bearing will slide out of the suspension strut mount -2- locking mechanism -arrow-.
- When installing, the deep-groove ball bearing cannot get back into the strut mount locking mechanism, from which noises may occur and the deep-groove ball bearing will be damaged due to contamination.

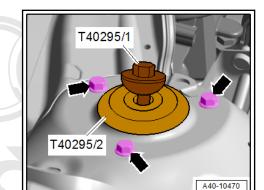
Special tools and workshop equipment required

♦ High Pressure Pump Shaft Holder -T40295-

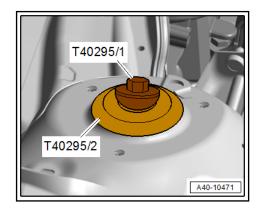


Procedure

- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Bulkhead; Plenum Chamber Cover, Removing and Installing.
- Remove the cover from the suspension strut tower.



- Place the Suspension Strut Tower Protection T40295/2-on mercial purposes, in part or in whole, is not the suspension strut tower. permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability ormation in this document. Copyright by AUDI AG.
- Attach the Assembly Aid -T40295/1- to the piston rod and tighten to 20 Nm.
- Loosen and remove the bolts -arrows- from the strut mount and counterhold the suspension strut while doing so.
- Lower the Assembly Aid -T40295/1- on the Suspension Strut Tower Protection -T40295/2-.



Assembling

Assemble in the reverse order of removal. Note the following:

Install the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Bulkhead; Plenum Chamber Cover, Removing and Installing.

Tightening Specifications

Refer to ⇒ -3.1 Suspension Strut and Upper Control Arm", page 61

4 **Lower Control Arm and Ball Joint**

- ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- ⇒ C4.2 ontrol Arm, Removing and Installing", page 76
- ⇒ C4.3 ontrol Arm Bonded Rubber Bushing, Replacing", page **80**
- ⇒ J4.4 oint, Removing and Installing", page 87

Overview - Lower Control Arm and Ball 4.1 **Joint**

If the components of the front axle (axle components and/or wheel rim) are replaced if damaged, the tightening specifications on the following threaded connections must be checked, when these threaded connections are not replaced during the repair procedure.

Testing torque 80 Nm for nut -Item 7 ⇒ Item 7 (page 75) is not and ball joint in tem of 0 u ⇒ ltem 10 (page: 75) antee or accept any liability

Until the testing torque is reached in the tightening direction turning of the connection is not permitted.

1 - Lower Control Arm

- Removing and Installing. Refer to ⇒ C4.2 ontrol Arm, Removing and Installing", page 76.
- If the control arm is bent and must be replaced, then the ball joint on this side of the vehicle must also be replaced

2 - Front Bonded Rubber **Bushing**

- Replacing. Refer to ≥ L4.3.1 ower Control <u>Arm Bonded Rubber</u> Bushing, Replacing", page 80 .
- Note the installation position. Refer to 5 Fig. "Installation position for the front bonded rubber bushing -1-<u>page 76</u> .

3 - Bolt

- □ Always replace after removing
- ☐ Tighten in the curb weight position. Refer to <u>⇒ B3.16 earing in</u> Curb Weight Position, Lifting Vehicles with copyrig Coil Spring", page upless au
- □ 70 Nm + 180°

4 - Subframe

5 - Bolt

- □ Always replace after removing
- □ 70 Nm + 180°

6 - Rear Bonded Rubber Bushing

- □ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.
- □ Replacing, Refer to ⇒ C4.3.2 ontrol Arm Rear Bonded Rubber Bushing, Replacing", page 83.
- Note the installation position for version 1. Refer to ⇒ Fig. ""Installation Position Rear Bonded Rubber Bushing Version 1"", page 76
- ☐ Grease version 1 after pressing in. Refer to <u>⇒ page 87</u>

7 - Nut

- □ Always replace after removing
- □ 60 Nm

8 - Wheel Bearing Housing

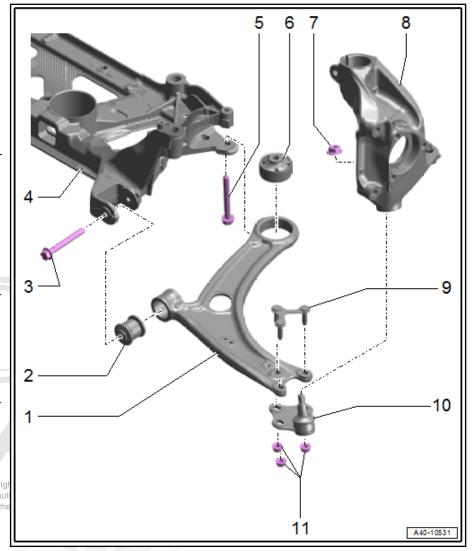
□ Removing and Installing. Refer to ⇒ B5.2 earing Housing, Removing and Installing", page 92.

9 - Retaining Piece

□ Always replace after removing

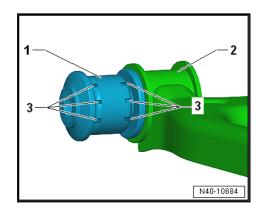
10 - Ball Joint

Checking. Refer to ⇒ Maintenance; Booklet 826; Maintenance; Components of the Front and Rear Axle: Play, Fasteners, Ball Joint Boots and Checking for Damage.



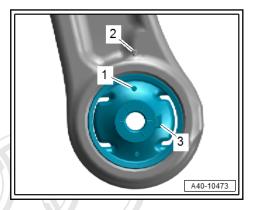
- \square Removing and Installing. Refer to \Rightarrow J4.4 oint, Removing and Installing", page 87.
- 11 Nuts
 - □ Always replace after removing
 - ☐ 40 Nm +45°

Installation position for the front bonded rubber bushing -1-



• The grooves -3- must point toward the control arm -2-.

Installation Position - Rear Bonded Rubber Bushing Version 1



- The arrow -1- on the bonded rubber bushing points to the arrow -2- on the control arm.
- The cam -3- must point to the center of the vehicle.



Note

- ♦ Version 1 of the rear bonded rubber bushing is not available as a replacement part. They must always be replaced with private or commercial purposes, in part or in whole, is not the version 2 rear bonded rubber bushing specific properties of information in this document. Copyright by AUDI AG.
- A mixed installation of version 1 and 2 rear bonded rubber bushings is not permitted.
- An installation position does not need to be noted for version 2 of the rear bonded rubber bushing.

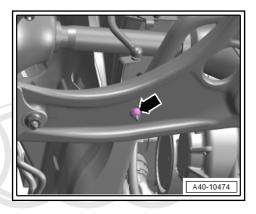
4.2 Lower Control Arm, Removing and Installing

Removing

 Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11

- Remove the wheel. Refer to \Rightarrow a1 nd Tires", page 255.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Noise Insulation, Removing and Installing.
- Loosen the wheel housing liner from the underbody trim panel and move it slightly to the side.

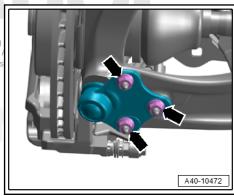
Applies to vehicles with a level control system sensor



Remove the nut -arrow- and free up the level control system sensor coupling rod from the control arm.

Applies to all

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- Mark the left and right ball joint installation position at the nuts -arrows- using a felt-tip pen.
- Remove the left and right nuts.
- Remove the control arm from the ball joint and then turn ball joint forward to take the load off the control arm.



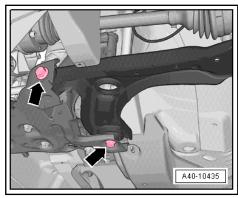
Note

Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.

Remove the bolts -arrows-.



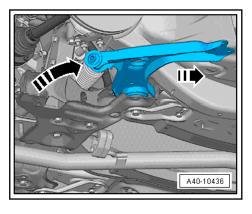




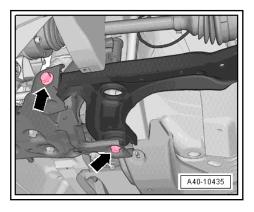


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- If depending on the transmission the front bolt cannot be removed, the subframe must be lowered.
- Lower the subframe a maximum of 100 mm. Refer to ≥ <u>L2.3 owering", page 27</u> .
- Tilt the control arm toward the rear and then remove it from the subframe in the direction of the -arrow-.



Installing



- Install the rear control arm into the subframe and swivel it forward.
- Insert the bolts -arrows- and tighten hand-tight.
- Install the subframe. Refer to ⇒ w2.4 ithout Steering Gear, Removing and Installing", page 33
- Tighten the control arm to the ball joint -arrows-. Refer to ≥ J4.4 oint, Removing and Installing", page 87.





Lift the wheel bearing in the curb weight position and tighten the bolts -arrows-. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.



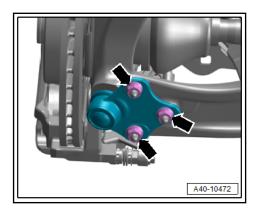


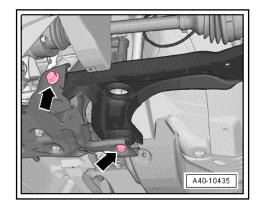
Install in the reverse order of removal while noting the following:

Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the \Rightarrow Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnos-
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- OBD-capable systems
- Electronic Damping Control Module -J250
- Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.





Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

Tightening Specifications

- Refer to ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- Refer to ⇒ -2.1 Front Level Control System Sensor", page
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Refer to ⇒ a1 nd Tires", page 255

4.3 **Lower Control Arm Bonded Rubber** Bushing, Replacing

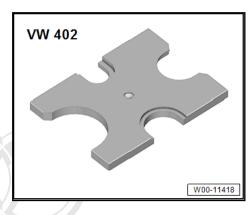
⇒ L4.3.1 ower Control Arm Bonded Rubber Bushing, Replac-<u>ing", page 80</u>

⇒ C4.3.2 ontrol Arm Rear Bonded Rubber Bushing, Replacing", page 83

4.3.1 Front Lower Control Arm Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

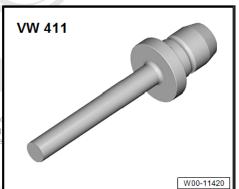
♦ Press Plate -VW 402-



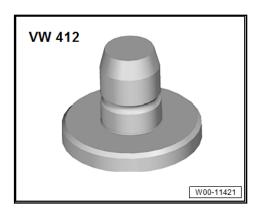
Press Piece - Rod -VW 411-



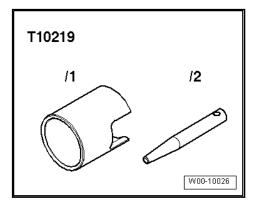
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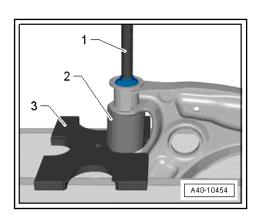
Press Piece - Multiple Use -VW 412-



♦ Wishbone Rubber Mount Assembly Tool -T10219-



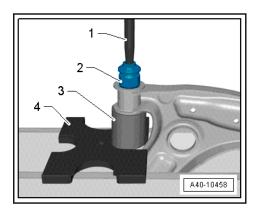
Bonded Rubber Bushing, Pressing Out



- Control arm is removed. Refer to ⇒ C4.2 ontrol Arm, Removing and Installing", page 76.
- Press out the bonded rubber bushings as shown.
- Press Piece Rod -VW 411-
- Wishbone Rubber Mount Assembly Tool Pipe -T10219/1-(The opening in the pipe is down and faces the control arm) Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- Press Plate 402 rectness of information in this document. Copyright by AUDI AG.



Bonded Rubber Bushing, Pressing In



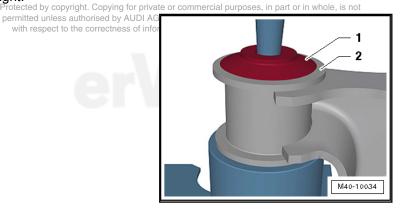
Note the installation position. Refer to <u>⇒ Fig. ""Installation</u> position for the front bonded rubber bushing -1- "", page 76.



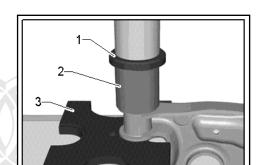
Note

The bonded rubber bushing will be crooked for a short time at the beginning of the installation. Later it will straighten out. It will not be necessary to guide it.

- Coat the outside of the bonded rubber bushing with Installation Lubricant (thinned with water in 1:20 ratio). Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Place the bonded rubber bushing on at an angle (in direction of control arm), when doing this the lip must slip into hole.
- Wishbone Rubber Mount Assembly Tool Drift -T10219/2-
- 2 -**Bonded Rubber Bushing**
- Wishbone Rubber Mount Assembly Tool -Tube -T10219/1-
- Press Plate -VW 402-
- Install the bonded rubber bushing until the core -1- and the control arm hole -2- are at the same height.



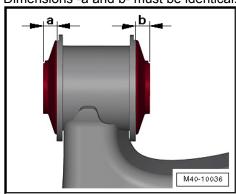
Press the bearing back slightly in the control arm.



- Press Piece Multiple Use -VW 412-
- Wishbone Rubber Mount Assembly Tool -Tube T10219/1-2 -
- Press Plate -VW 402-3 -

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Dimensions -a and b- must be identical. h respect to the correctness of information in this document. Copyright by AUDI AG.



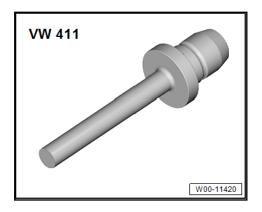
Lower Control Arm Rear Bonded Rub-4.3.2 ber Bushing, Replacing

Special tools and workshop equipment required

♦ Press Plate -VW 401-



Press Piece - Rod -VW 411-



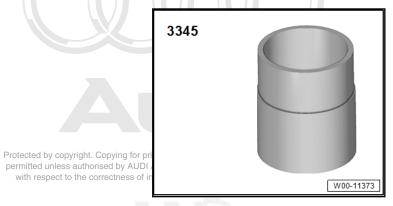
♦ Press Piece - Multiple Use -VW 412-



Sleeve -VW 459/2- from the Bearing Installer - Ball Joint/ Bushing/Bearing -VW 459-



Bearing Installer - Wheel Bearing -3345-



Bearing Installer - Multiple Use -3348-

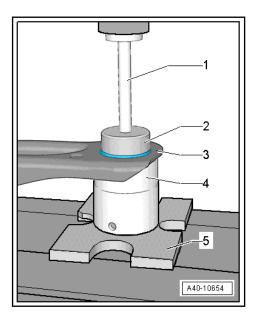


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◆ Grease G052 150 A2- Refer to the ⇒ Electronic Parts AUDI AG. Catalog (ETKA).

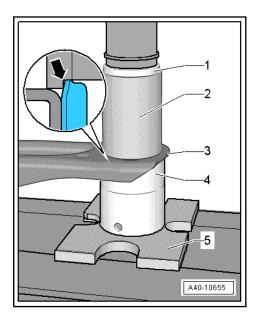
Bonded Rubber Bushing, Pressing Out





- Control arm is removed. Refer to ⇒ C4.2 ontrol Arm, Removing and Installing", page 76.
- Press out the bonded rubber bushings as shown.
- Press Piece Rod -VW 411-1 -
- 2 -Bearing Installer - Multiple Use -3348-
- 3 -Control Arm
- Bearing Installer Wheel Bearing -3345-
- Press Plate -VW 401-

Bonded Rubber Bushing, Pressing In



- Note the installation position of the bonded rubber bushing. Refer to ⇒ Fig. ""Installation Position - Rear Bonded Rubber Bushing Version 1"", page 76 .
- Install the bonded rubber bushing as shown.
- Press Piece Multiple Use -VW 412-1 -
- 2 -Sleeve -VW 459/2-, the inner offset in the sleeve -arrowpoints downward
- 3 -Control Arm
- Bearing Installer Wheel Bearing -3345-
- Press Plate -VW 401-



Note

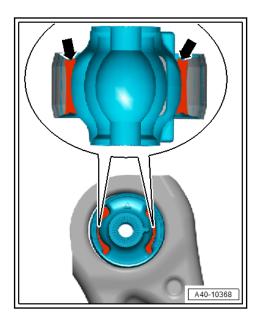
Install the bonded rubber bushing far enough until the Bearing Installer - Wheel Bearing -3345- contacts the control arm.



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Applies to rear bonded rubber bushing version 1



Evenly grease the "kidneys" -arrows- of the bonded rubber bushing from above with 0.1 g (0 oz) Grease -G 052 150 A2- $\,$ using a paint brush.



Note

Greasing the bonded rubber bushing prevents noise generation in the run-in phase.

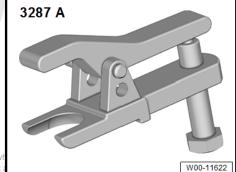
Applies to all

Install the control arm. Refer to ⇒ C4.2 ontrol Arm, Removing and Installing", page 76.

Ball Joint, Removing and Installing

Special tools and workshop equipment required

◆ Puller - Ball Joint -3287 A-



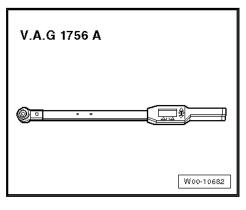
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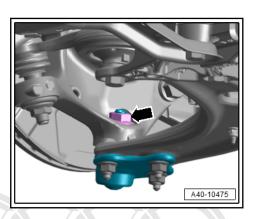
Torque Wrench 1332 Insert - Ring Wrench - 18mm -V.A.G 1332/10-



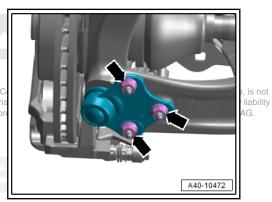
Digital Torque Wrench -V.A.G 1756 A-



Removing



- Remove the wheel. Refer to <u>⇒ a1 nd Tires</u>", page 255.
- Loosen the nut -arrow- on the ball joint approximately three
- Mark the left and right ball joint installation position at the nuts -arrows- using a felt-tip pen.



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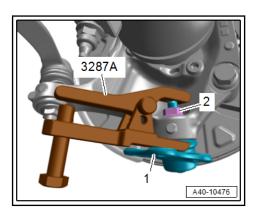
Remove the left and right nuts.



Note

Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.

- Remove the control arm from the ball joint and press the suspension strut slightly toward the rear.
- Position the Puller Ball Joint -3287A- and press the ball joint out as shown.





WARNING

There is a risk of injury from falling components.

- When pressing off, the ball joint loosens abruptly from the wheel bearing housing. Use, for example, the Engine and Gearbox Jack -VAS 6931- to secure.
- Remove the nut -2- and remove the ball joint -1-.



Note

- Counterhold the inner contact on the ball joint when loosening and tightening the ball joint nut.
- The counterhold tool must not be tilted.

Installing

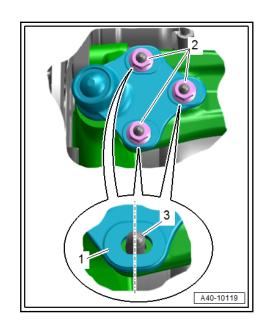
Install in the reverse order of removal while noting the following:



Note

Always replace self-locking nuts and retaining piece.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not Position the new retaining piece 31 bin the installation position are accept any liability tion and align it centered to the obling holes on the ball Join Copyright by AUDI AG. -1- as shown.



Tighten the new nuts -2- to the tightening specification but without any additional turns.

Evaluate if an axle alignment is needed. Refer to <u>⇒ f2.2 or Axle</u> Alignment, Evaluating", page 257

Tightening Specifications

- Refer to ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- Refer to ⇒ -2.1 Front Level Control System Sensor", page
- Refer to <u>⇒ a1 nd Tires</u>", page 255



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5 Wheel Bearing

- ⇒ -5.1 Wheel Bearing", page 91
- ⇒ B5.2 earing Housing, Removing and Installing", page 92
- ⇒ B5.3 earing Unit, Removing and Installing", page 96

5.1 Overview - Wheel Bearing

1 - Wheel Bearing Unit

- ☐ The lateral run-out of the wheel hub when installed can be a maximum of 0.02 mm.
- Measure the lateral run-out with the Dial Indicator - 0-10mm -VAS 6079- and Dial Indicator Bracket -VAS 6079/1-
- ☐ Removing and Instal^{permit} ling. Refer to ⇒ B5.3 earing Unit, Removing and Installing", <u>page 96</u> .
- Cannot be serviced

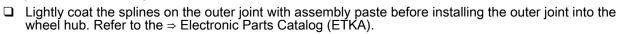


2 - Bolt

- Quantity: 3
- Always replace after removing
- Blue coated: 70 Nm +90°
- ☐ Gray: 90 Nm +90°

3 - Drive Axle

Do not let the drive axle hang down or the inner joint could be damaged if it is bent too far.

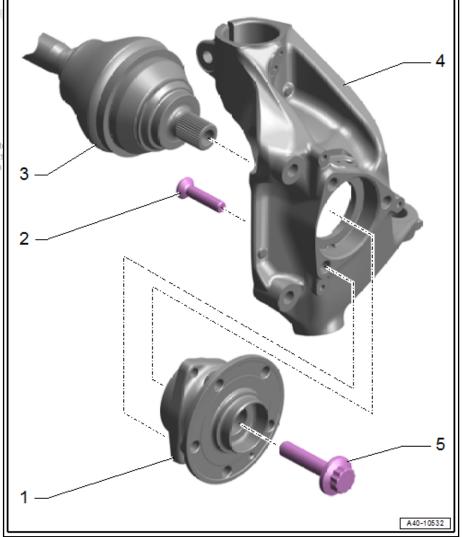


4 - Wheel Bearing Housing

□ Removing and Installing. Refer to ⇒ B5.2 earing Housing, Removing and Installing", page 92.

5 - Bolt

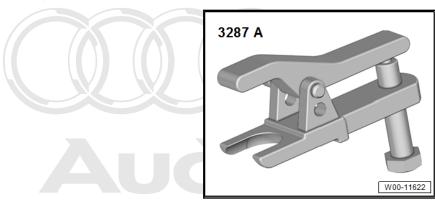
- Always replace after removing
- ☐ Before installing, clean the threads in the CV joint with a thread tap.
- WHT.005.437. / black: 200 Nm +180°. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and <u>Tightening", page 105</u> .
- WHT.005.437.A / silver = 200 Nm + 90°. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105.



Wheel Bearing Housing, Removing 5.2 and Installing

Special tools and workshop equipment required

♦ Puller - Ball Joint -3287 A-



Spreader Tool -3424-

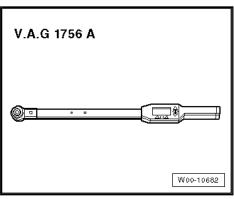
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Torque Wrench, 40-200Nm -V.A.G 1332A-



Digital Torque Wrench -V.A.G 1756 A-



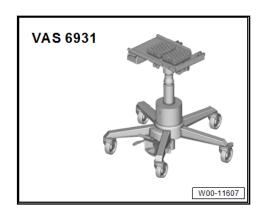
Engine and Gearbox Jack -VAS 6931-

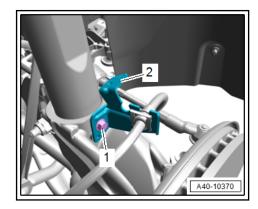
Removing



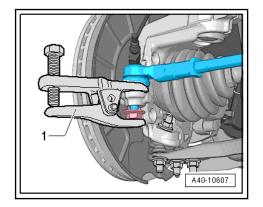
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- Loosen the drive axle threaded connection on the wheel side. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105.
- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Brake Rotor, Removing and Installing.
- Remove the ABS speed sensor. Refer to ⇒ Brake System;
 Rep. Gr. 45; Sensors; Overview Front Axle Speed Sensor.
- Remove the bolt -1-, remove the bracket -2- with the brake hose from the wheel bearing housing and tie up to the side.



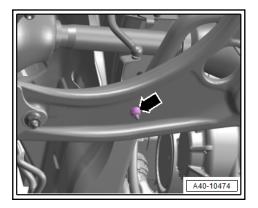


- Remove and free up the brake line bracket and wires from the wheel bearing housing.
- Position the Engine and Gearbox Jack -VAS 6931- with the mounting plate under the wheel bearing housing.
- Loosen the nut from the tie rod end, but do not remove it yet.



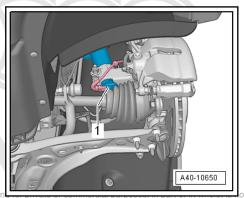
Press off tie rod end from wheel bearing housing with Puller
 Ball Joint -3287 A- -1- and then remove the nut.

Applies to vehicles with a level control system sensor



Remove the nut -arrow- and free up the level control system sensor coupling rod from the control arm.

Applies to vehicles with electronic damping (Audi magnetic ride)



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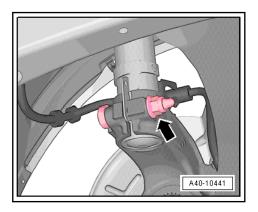
Disconnect the connector -1- and free up the wire one the correctness of information in this document. Copyright by AUDI AG. suspension strut.



Note

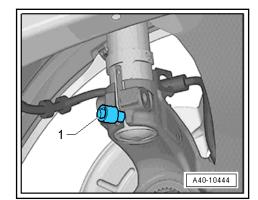
Remove the connector with both hands. Use one hand to open the lock (retainer) and use the other hand to press it off. Do not use tools.

Applies to all



- Disconnect the threaded connection for the wheel bearing housing/suspension strut -arrow-.
- Insert the Spreader Tool -3424- -item 1- into the wheel bearing housing slot.

A40-10472



- Turn the ratchet 90° and remove it from the Spreader Tool -3424-.
- Mark the ball joint installation position at the nuts -arrowsusing a felt-tip pen.

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- Remove the nuts.
- Remove the control arm from the ball joint.



Note

Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.

- Remove the wheel bearing housing downward from the shock absorber tube.
- Pull the wheel hub off the drive axle outer joint.



Note

If the components cannot be separated, press the drive axle out of the wheel bearing. Refer to ⇒ A6.4.3 xle, Pressing out of Wheel Bearing", page 115.



Caution

There is a risk of damaging a drive axle that is hanging down by over bending the inner joint.

Secure the drive axle to the body using a wire.

Remove the wheel bearing housing with the ball joint.
 Installing

Install in the reverse order of removal, while noting the following:

- Install the ball joint. Refer to ⇒ J4.4 oint, Removing and Installing", page 87.
- Tighten the threaded connection between the drive axle and wheel hub. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the \Rightarrow Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics of purposes, in part or in whole, is not tics ermitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability.
- Select the <u>Select individual test</u> tab and select the following tree structure consecutively:
- **♦** Chassis
- ♦ Wheel Damping Electronics
- ♦ 01 OBD-capable systems
- ♦ 14 Electronic Damping Control Module -J250
- ♦ 14 Electronic Damping Control Module, functions
- ♦ 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or <u>Axle Alignment, Evaluating</u>", page 257.

Tightening Specifications

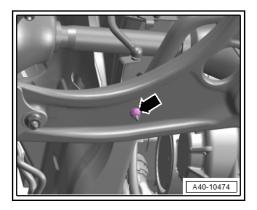
- ⇒ -5.1 Wheel Bearing", page 91
- ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- ◆ ⇒ -3.1 Suspension Strut and Upper Control Arm", page 61
- ⇒ -2.1 Front Level Control System Sensor", page 250
- Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Overview -Front Axle Speed Sensor.
- Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Overview Front Brakes.
- ♦ ⇒ a1 nd Tires", page 255

5.3 Wheel Bearing Unit, Removing and Installing

Removing

 Loosen the drive axle threaded connection on the wheel side. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105.

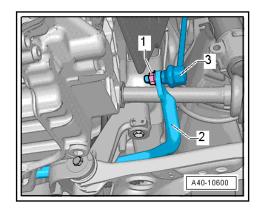
Applies to vehicles with a level control system sensor



 Remove the nut -arrow- and free up the level control system sensor coupling rod from the control arm.

Applies to all

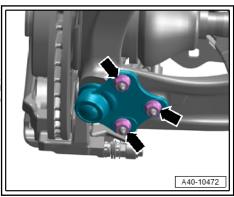
- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Brake Rotor, Removing and Installing.
- Remove the nut -1-, remove the coupling rod -3- from the stabilizer bar -2- and pivot it to the side.



 Mark the ball joint installation position at the nuts -arrowsusing a felt-tip pen.



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- Remove the nuts.
- Remove the control arm from the ball joint.



Note

Make sure the ball joint rubber boot is not damaged during assembly work. If necessary protect the ball joint rubber boot against damage.

Applies to vehicles with sport suspension

Lower the suspension strut on vehicles with sport suspension. Refer to ⇒ S3.4 trut, Lowering", page 71. If the vehicle does not have sport suspension, the suspension strut must not be lowered.

Applies to all

 Pull the wheel hub off the drive axle outer joint.
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Note

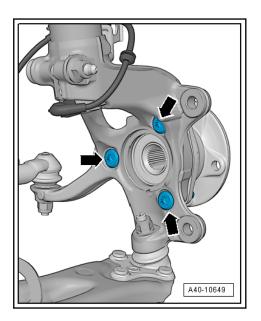
If the components cannot be separated, press the drive axle out of the wheel bearing. Refer to ⇒ A6.4.3 xle, Pressing out of Wheel Bearing", page 115 .



Caution

There is a risk of damaging a drive axle that is hanging down by over bending the inner joint.

- Secure the drive axle to the body using a wire.
- Insert the ball joint back into the control arm and install the nuts.
- Remove the bolts -arrows-.



Remove the wheel bearing unit from wheel bearing housing.

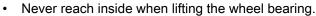


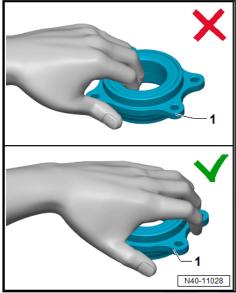


Caution

There is a risk of contaminating and damaging the seal.

- The wheel bearing -1- must always face up in order to remove the wheel bearing unit.
- Always set the wheel bearing unit down on the wheel hub -2-.





Hold the wheel bearing only on the outside.

Installing

Install in the reverse order of removar while noting the following cial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

Install the ball joint. Refer to the part of the part Installing", page 87

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the \Rightarrow Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start tics.
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems
- 14 Electronic Damping Control Module -J250 ng for private or commercial purposes, in part or in whole, is not
- norised by AUDI AG. AUDI AG does not guarantee or accept any liability Luncty On Stromation in this document. Copyright by AUDI AG. Electronic Damping Control
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

Tightening Specifications

- Refer to ⇒ -2.1 Subframe", page 21
- Refer to ⇒ -5.1 Wheel Bearing", page 91
- Refer to ⇒ -3.1 Suspension Strut and Upper Control Arm", page 61
- Refer to ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- Refer to ⇒ -2.1 Front Level Control System Sensor", page
- Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105
- Refer to ⇒ Brake System; Rep. Gr. 46; Front Brakes; Overview - Front Brakes.
- Refer to <u>⇒ a1 nd Tires</u>", page 255

6 Drive Axle

- ⇒ -6.1 Drive Axle", page 101
- ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105
- ⇒ A6.3 xle Heat Shield, Removing and Installing", page 106
- ⇒ A6.4 xle, Removing and Installing", page 108
- ⇒ A6.5 xle, Disassembling and Assembling", page 117
- ⇒ C6.6 V Joint, Checking", page 130
- ⇒ C6.7 V Joint, Checking", page 132
- 6.1 Overview Drive Axle
- ⇒ -6.1.1 Drive Axle, Bolted to Transmission", page 101
- ⇒ -6.1.2 Drive Axle, Attached to Transmission", page 103

6.1.1 Overview - Drive Axle, Bolted to Transmission

Filling joints with grease

Grease	Outer joint diame- ter	Inner joint diame- ter
Refer to the ⇒ Electronic Parts Catalog (ET-KA).	98 mm	108 mm
Total quantity	120 g	140 g
in joint	80 g	60 g
in CV boot	40 g	80 g



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1 - Bolt

- □ Always replace after removing
- Loosening and tightening. Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tighten-<u>ing", page 105</u>
- before installing, clean the threads in the CV joint with a tap.
- □ Bolt WHT.005.437 / black 180° additional
- □ Bolt WHT.005.437. A / silver 90° additional turn.

2 - Outer CV Joint

- □ Checking. Refer to ≥ C6.6 V Joint, Checking", page 130
- □ Removing. Refer to ⇒ page 118
- ☐ Installing. Refer to ⇒ page 119.
- When installing the joint on the axle shaft, the splines on the axle witted u shaft must be lightly coated with the grease used in the joint.

3 - Circlip

- □ Always replace after removing
- Insert in shaft groove

4 - Clamp

- Always replace after removing
- ☐ Tensioning. Refer to <u>⇒ page 121</u>.

5 - Outer CV Joint CV Boot

Check for tears and scuffing

6 - Clamp

- □ Always replace after removing
- ☐ Tensioning. Refer to <u>⇒ page 121</u>.

7 - Profile Shaft

8 - Clamp

- Always replace after removing
- □ Tensioning. Refer to \Rightarrow page 121.

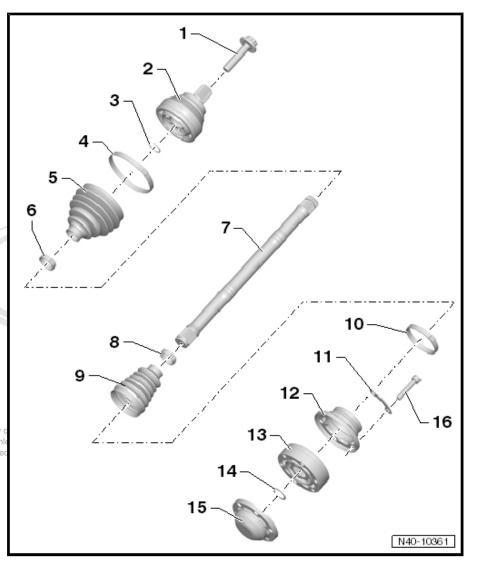
9 - Inner CV Joint CV Boot

Check for tears and scuffing

10 - Clamp

- Always replace after removing
- □ Tensioning. Refer to ⇒ page 121.

11 - Backing Plate



12 - Cap

- Always replace after removing
- ☐ Drive off CV joint using a drift
- ☐ Apply sealant between the joint and cover. Refer to ⇒ page 120.
- ☐ The adhesive surface must be free of oil and grease

13 - Inner CV Joint

- Only replace completely
- ☐ Checking. Refer to <u>⇒ C6.7 V Joint, Checking", page 132</u>.
- □ Removing. Refer to ⇒ page 120.
- ☐ Installing. Refer to ⇒ page 120.
- ☐ When installing the joint on the axle shaft, the splines on the axle shaft must be lightly coated with the grease used in the joint.

14 - Circlip

- □ Always replace after removing
- ☐ Removing and installing with Circlip Pliers -VW 161A-

15 - Cap

- □ Always replace after removing
- ☐ Drive off CV joint using a drift
- Apply sealant between the joint and cover. Refer to ⇒ page 120.

16 - Bolt

- □ Always replace after removing
- ☐ Pre-tightening specification: diagonal sequence to 10 Nm.
- ☐ M8 tightening specification: diagonal sequence to 40 Nm.
- ☐ M10 tightening specification: diagonal sequence to 70 Nm.

6.1.2 Overview - Drive Axle, Attached to Transmission

Filling joints with grease

Grease	Outer joint	Inner joint/triple roller joint
Refer to the ⇒ Electronic Parts Catalog (ET-KA).		
Total quantity	120 g	140 g
in joint	80 g	70 g
in CV boot	40 g	70 g



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Audi TT 2015 ➤

1 - Outer CV Joint

- Only replace completely
- □ Removing. Refer to ⇒ page 125.
- Installing: drive onto shaft with a plastic mallet until compressed circlip rebounds.
- Checking. Refer to ⇒ C6.6 V Joint, Checking", page 130 .

2 - Bolt

- Always replace if removed
- Loosening and tightening. Refer to ⇒ A6.2 xle
 Threaded Connection,
 Loosening and Tightening", page 105
- ☐ Before installing, clean the threads in the CV joint with a thread tap.
- □ Bolt WHT.005.437 / black 180° additional turn.
- Bolt WHT.005.437. A / silver 90° additional turn.

3 - Circlip

- Always replace if removed
- ☐ Insert in shaft groove

4 - Clamp

- Always replace if removed
- □ Tensioning. Refer to ⇒ page 128.

5 - CV Joint CV Boot

Check for tears and scuffing

6 - Clamp

- □ Always replace if removed
- Tensioning Refer to ing page 128 ommercial purposes, in part or in whole, is not permitted unless authorised by Auth Ac. Auth Ag does not guarantee or accept any liability
- 7 Drive Axie respect to the correctness of information in this document. Copyright by AUDI AG.

8 - Clamp

- □ Always replace if removed
- □ Tensioning. Refer to ⇒ page 128.

9 - CV Boot for Triple Roller Joint

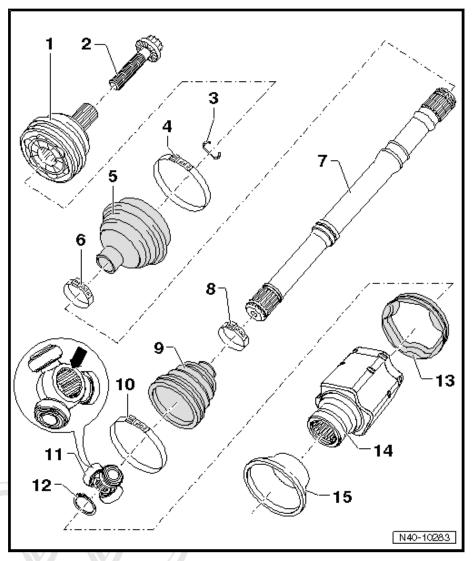
Check for tears and scuffing

10 - Clamp

- □ Always replace if removed
- ☐ Tensioning. Refer to <u>⇒ page 128</u>.

11 - Triple Roller Star with Rollers

The chamfer -arrow- faces the drive axle splines.

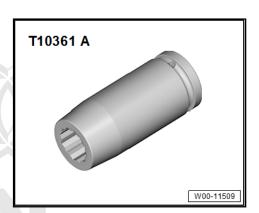


- 12 Circlip
 - □ Always replace if removed
 - ☐ Insert in shaft groove
- 13 Adapter
- 14 Joint
- 15 Cap
 - ☐ Removing. Refer to ⇒ page 129.
 - ☐ Installing. Refer to ⇒ page 129.

6.2 **Drive Axle Threaded Connection,** Loosening and Tightening

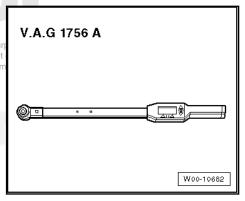
Special tools and workshop equipment required

♦ Socket AF 24 mm -T10361A-



◆ Digital Torque Wrench -V.A.G 1756 A-

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Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose.

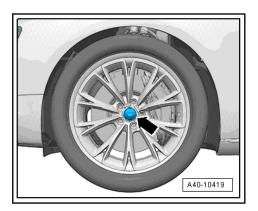
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Note the following when doing so:

Procedure for loosening the twelve-point bolt.

Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If the vehicle must be moved, be sure to note the following:

- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 200 Nm.

Twelve-Point Bolt, Loosening



- With vehicle still resting on wheels, loosen the twelve-point bolt -arrow- with Socket AF 24 mm -T10361A- maximum 90°, otherwise, the wheel bearing will be damaged.
- Lift the vehicle just enough so that the wheels are hanging
- Apply the brakes (a second technician required).
- Remove the twelve-point bolt -arrow-.



Note

Before installing, clean the threads in the CV joint with a thread tap.

Twelve-Point Bolt, Installing ected by copyright. Copying for private or commercial purposes, in part or in whole, is not tted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

Replace the twelve-point bolt pect to the correctness of information in this document. Copyright by AUDI AG.



Note

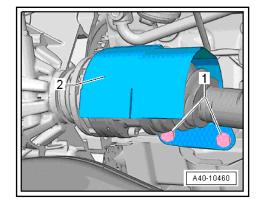
Wheels must not yet touch the ground when tightening the drive axle or the wheel bearing can be damaged.

- Apply the brakes (a second technician required).
- Tighten the twelve-point bolt to 200 Nm.
- Set the vehicle on its wheels.
- Bolt WHT.005.437 / black 180° additional turn.
- Bolt WHT.005.437.A / silver 90° additional turn.

6.3 Drive Axle Heat Shield, Removing and Installing

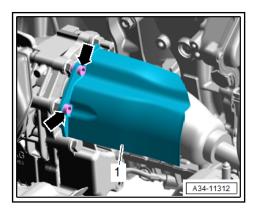
FWD:





Component	Tightening Specification
Bolts -1-	25 Nm

AWD:



Component	Tightening Specification
Nuts -arrows-	◆ Pre-tightening: 10 Nm
	◆ Final tightening specification: 20 Nm



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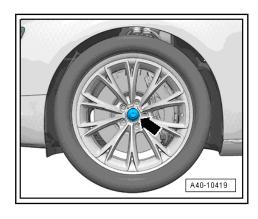


6.4 Drive Axle, Removing and Installing

- ⇒ A6.4.1 xle, Removing and Installing, Bolted to Transmission", page 108
- \Rightarrow A6.4.2 xle, Removing and Installing, Attached to the Transmission Stub Shaft", page 110
- ⇒ A6.4.3 xle, Pressing out of Wheel Bearing", page 115

Drive Axle, Removing and Installing, 6.4.1 **Bolted to Transmission**

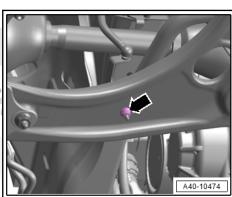
Removing



- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to <u>⇒ A6.2 xle Threaded Connection</u>, Loosening and Tightening", page 105.
- Remove the wheel. Refer to ⇒ a1 nd Tires", page 255.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Noise Insulation, Removing and Installing.

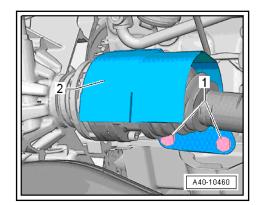
Applies to vehicles with a level control system sensor





- Remove the nut -arrow- and free up the level control system sensor coupling rod from the control arm.
- If installed, remove the bolts -1- and the heat shield -2-.

A40-10651



- Remove the coupling rod. Refer to ⇒ R2.8 od, Removing and Installing", page 59.
- Remove the drive axle from the flange shaft/transmission -arrows- and tilt upwards.

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Due to the narrow space the wheel bearing housing must be turned.



Note

The wheel bearing housing can also be turned with the steering wheel.

- Pull the drive axle out of the wheel hub.
- Remove the drive axle.



Note

If the components cannot be separated, press the drive axle out of the wheel bearing. Refer to *⇒* A6.4.3 xle, Pressing out of Wheel Bearing", page 115 .

Installing

Install in the reverse order of removal while noting the following:

Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

Connect the ⇒ Vehicle diagnostic tester.

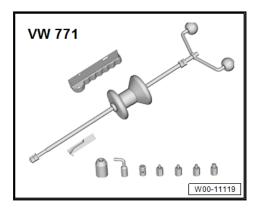
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems
- 14 Electronic Damping Control Module -J250
- 14 Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to \Rightarrow A3.1 ssistance Systems Front Camera, Calibrating", page 275.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

Tightening Specifications

- Refer to ⇒ -6.1.1 Drive Axle, Bolted to Transmission", page
- Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105
- Refer to ⇒ -2.1 Front Level Control System Sensor", page
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- emitted unless authorised by AUDI AG. AUDI AG does not quarantee or accept any liability **Prive: Axle** ra**Removing and Installing** by AUDI AG. 6.4.2 Attached to the Transmission Stub Shaft

Special tools and workshop equipment required

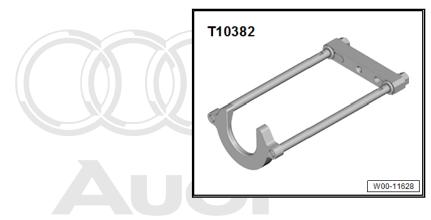
♦ Slide Hammer Set -VW 771-



◆ Tensioning Strap -T10038-

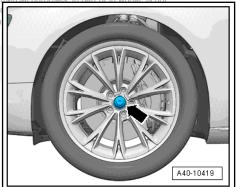


♦ Puller - Drive Axle -T10382-



Removing

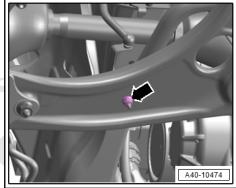
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- Loosen the drive axle threaded connection on the wheel side -arrow-. Refer to \Rightarrow A6.2 xle Threaded Connection, Loosening and Tightening", page 105 .
- Remove the wheel. Refer to \Rightarrow a1 nd Tires", page 255.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.

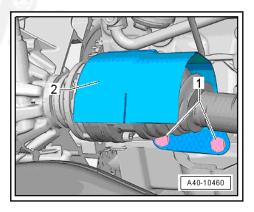


Applies to vehicles with a level control system sensor



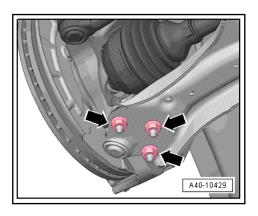
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- Remove the nut -arrow- and free to the level control system AUDI AG does not guarantee or accept any liability and free the control system and free the control system AUDI AG does not guarantee or accept any liability aspect to the correctness of information in this document. Copyright by AUDI AG. sensor coupling rod from the control arm.
- If installed, remove the bolts -1- and the heat shield -2-.



Remove the coupling rod. Refer to \Rightarrow R2.8 od, Removing and Installing", page 59 .

Applies to all



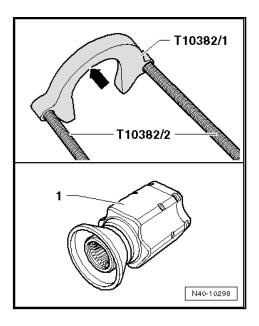
- Remove the nuts -arrows-.
- Remove the wheel bearing housing with the ball joint from the control arm.
- Slide outer joint out of wheel hub by hand.
- Secure the drive axle to keep it from falling down.



Note

Do not let the drive axle hang down. The inner joint could be damaged if it is bent too far.

- Install the Puller - Driveshaft -T10382-.



For the CV joint -1-, the surface -arrow- of the Puller - Drive-shaft - Removing Plate -T10382/1- must face the Puller - Drive-shaft - Spindles -T10382/2-.

 Attach the Puller - Drive Axle -T10382- to the Slide Hammer Set -VW 771-.



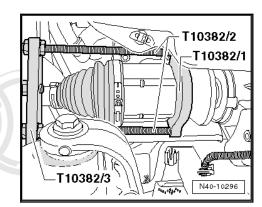
Note

In order to remove the drive axle from the transmission using the Puller - Driveshaft -T10382-, the suspension strut and all its components must be pulled to the back.

Pull the suspension strut and its components using the Tensioning Strap -T10038- as far as possible to the back, for example on the workshop hoist arm, until the Puller - Driveschaft -T10382- can be installed parallel on the surface of the correctness of information in this document. Converted by AUDI AG.

T10038

Install the Puller - Driveshaft -T10382- and remove the drive axle.



Remove the drive axle from the vehicle.

Installing

Install in reverse order of removal while noting the following:

- Remove any paint residue and/or corresion in threads/G does not guarantee or accept any liability n this document. Copyright by AUDI AG splines of the outer joint!
- Install the new circlip into the stub shaft groove on the trans-
- Replace the shaft seal on the transmission. Refer to ⇒ Transmission; Rep. Gr. 39; Seals; Component Location Overview - Seals.
- Grease all around the area of the transmission pin splines with approximately 2 g (0.1 oz) grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Bring the outer and inner splines from the transmission and the CV joint into the engagement.
- Grab the drive axle by hand and push it all the way into the joint.
- Now push the ball joint with one »jerk« onto the transmission stub shaft.
- Slide the joint piece with the drive axle onto the transmission pins until the circlip engages.



Note

Never use a hammer or striking tool!

Make sure the joint is seated correctly, to do this pull the joint against the resistance of the circlip.



Caution

When checking, only pull on the joint piece and not on the drive axle.

Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).

On vehicles with electronically controlled damping (Audi magnetic ride), perform the function "Adapt the control position" with the ⇒ Vehicle diagnostic tester.

Connect the ⇒ Vehicle diagnostic tester.

- Select Diagnostic operating mode and Start diagnostics.
- Select the <u>Select individual test</u> tab and select the following tree structure consecutively:
- ♦ Chassis
- ♦ Wheel Damping Electronics
- ♦ 01 OBD-capable systems
- ♦ 14 Electronic Damping Control Module -J250
- ♦ 14 Electronic Damping Control Module, functions
- ♦ 14 Control Position, readapting
- If the control position was reprogrammed and if the vehicle has lane assist, then it will then be necessary to calibrate the driver assistance systems front camera. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

Tightening Specifications

- Refer to ⇒ A6.2 xle Threaded Connection, Loosening and Tightening", page 105
- ◆ Refer to ⇒ -2.1 Front Level Control System Sensor", page 250
- Refer to ⇒ -2.1 Subframe", page 21
- ♦ Refer to ⇒ -4.1 Power Control Armyand Ball Joint page 74 es, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- Refer to ⇒ Body Exterior, Rep. Gr. 66, Noise Insulation, ument. Copyright by AUDI AG. Overview - Noise Insulation.
- ♦ Refer to ⇒ a1 nd Tires", page 255

6.4.3 Drive Axle, Pressing out of Wheel Bearing

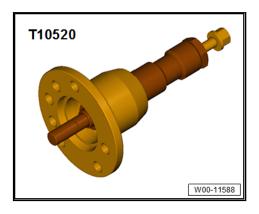


Note

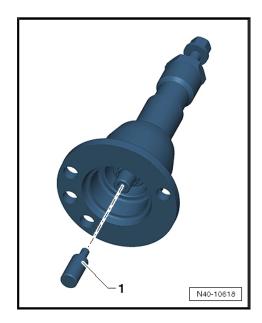
If the drive axle cannot be pulled out of the wheel bearing, then the drive axle can be pushed out of the wheel bearing using the Drive Shaft Remover -T10520-.

Special tools and workshop equipment required

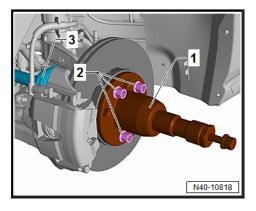
Drive Shaft Remover -T10520-



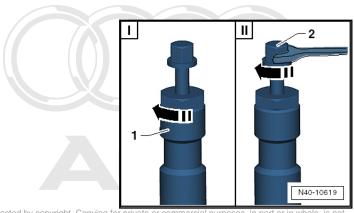
Procedure



- Check if the thrust piece -1- is inserted in the Drive Shaft Remover T10520-
- To press out the drive axle -3-, secure the Drive Shaft Remover -T10520- -item 1- on the wheel hub with three wheel bolts -2-.



Follow the specified sequence exactly.



I - Tighten the knurled nut -1- hand-tight.

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II - Only turn the bolt -2- using a wrench to remove the drive axle



Note

When pressing out or resetting the drive axle, the spindle must be turned back in the starting position so the hydraulic function can be used.

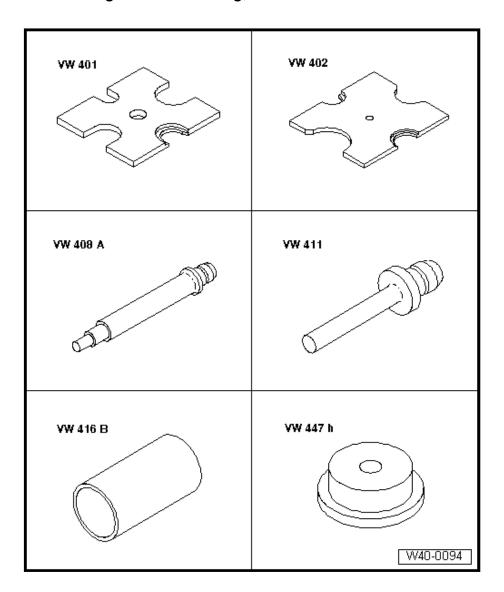
Drive Axle, Disassembling and Assem-6.5 bling

⇒ A6.5.1 xle, Disassembling and Assembling, Bolted to Transmission", page 117

 \Rightarrow A6.5.2 xle, Servicing, Attached to the Transmission Stub Shaft", page 122

Drive Axle, Disassembling and Assembling, Bolted to Transmission 6.5.1

Special tools and workshop equipment required

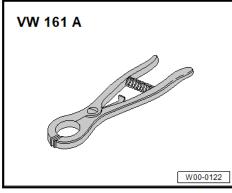


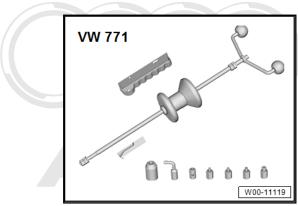
- Press Plate -VW 401-
- Press Plate -VW 402-
- Press Piece Rod -VW 408 A-
- Press Piece Rod -VW 411-

- Press Piece 37mm -VW 416 B-
- Press Piece Multiple Use -VW 447 H-
- Circlip Pliers -VW 161A-

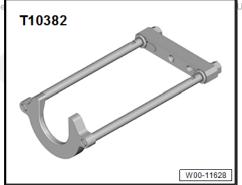
Slide Hammer Set -VW 771-

Puller - Drive Axle -T10382-





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Removing the outer CV joint



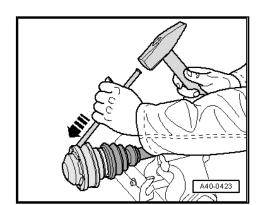


- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Align the Puller Driveshaft -T10382- so that the flat side of the Puller - Driveshaft - Removing Plate -T10382/1- faces the Puller - Driveshaft - Spindles -T10382/2-.
- Attach the Puller Driveshaft -T10382- to the Slide Hammer Set -VW 771-.
- Remove the CV joint from the drive axle using the Puller -Driveshaft -T10382- and Slide Hammer Set -VW 771-.
- 1 Puller Drive Axle Removing Plate -T10382/1-
- 2 Puller Drive Axle Spindles -T10382/2-

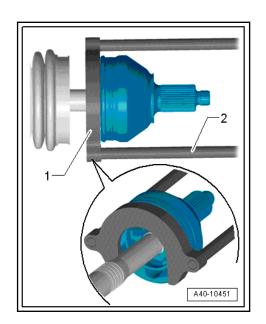
Outer CV Joint, Installing

- Install the new circlips.
- Slide the new CV boot onto the drive axle if necessary.
- Drive joint onto the shaft with a plastic hammer until the circlip engages.

Drive off cover for inner joint

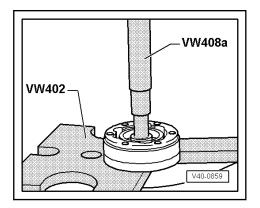


- Drive the cover down using a copper or brass drift.
- Remove the circlip.
- Remove both clamps, and push the CV boot toward the outer joint.



Drive off the CV boot with a drift.

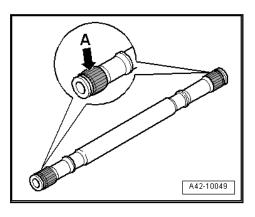
Inner CV Joint, Removing



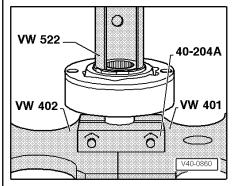
- Support the ball hub when pressing off.

Inner CV Joint, Pressing On





- Before installing the joint piece, the splines -arrow A- must be lightly coated with the grease used in the joint.
- Press or joint/until it stops for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



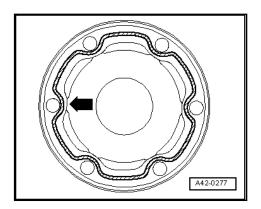
Install the circlip.



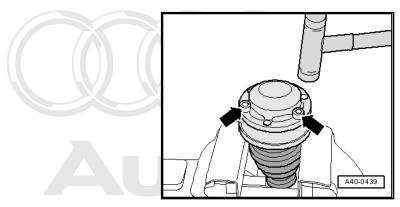
Note

Chamfer on inner diameter of ball hub (splines) must face the contact shoulder on the drive axle.

Coat the sealing surface on the cover with sealant and then install it.



- Apply sealant -hatched area- to the clean cover surface.
- Sealant bead: apply a continuous bead with a 2 to 3 mm diameter in area of inner holes -arrow-.
- Align the new cover with screws -arrows- to the screw holes.

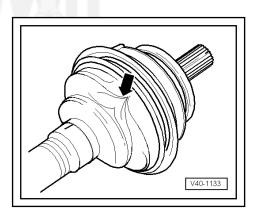


It must be aligned exactly because it cannot be aligned aften of private or commercial purposes, in part or in whole, is not installing.

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- Drive cover on with a plastic mallet.
- Wipe away any sealant leaking out.

CV Boot, Venting

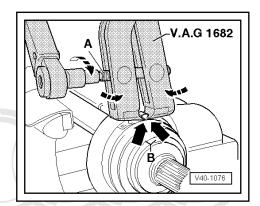


The CV boot is frequently pressed in when placed on the joint housing. This creates a vacuum in the CV boot, which pulls a fold inward when the car is driven -arrow-.

Therefore, note the following:

Before tensioning the clamping sleeves, balance the pressure by raising the CV boot.

Tension the CV boots stainless steel clamps.



- Attach the Clamping Pliers -V.A.G 1682- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle in the direction of -arrow A- using a torque wrench (do not tilt the pliers).
- Tightening specification: 20 Nm



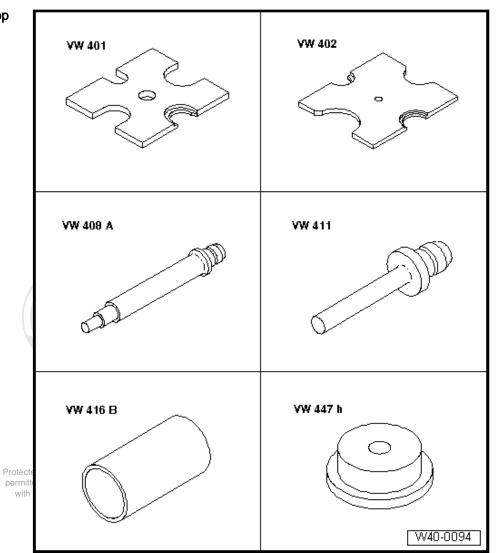
Note

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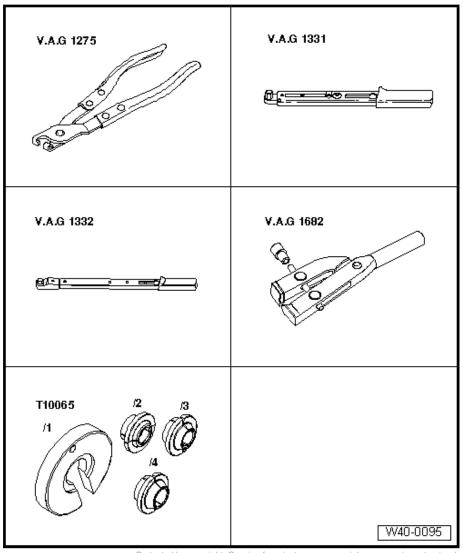
- Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS2 grease, if necessary.
- If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.

6.5.2 Drive Axle, Servicing, Attached to the Transmission Stub Shaft

Special tools and workshop equipment required



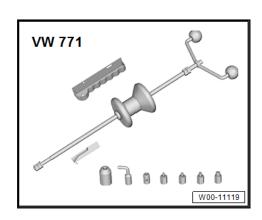
- ♦ Press Plate -VW 401-
- ♦ Press Plate -VW 402-
- ♦ Press Piece Rod -VW 408 A-
- ♦ Press Piece Rod -VW 411-
- ♦ Press Piece 37mm -VW 416 B-
- ♦ Press Piece Multiple Use -VW 447 H-



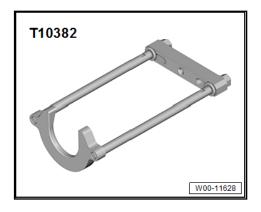
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- Hose Clip Pliers -V.A.G 1275A-
- Torque Wrench, 6-50Nm -VAG 1331A-
- Torque Wrench, 40-200Nm -V.A.G 1332A-
- Clamping Pliers -V.A.G 1682 A-
- Tripod Joint Tool -T10065-
- Slide Hammer Set -VW 771-





Puller - Drive Axle -T10382-

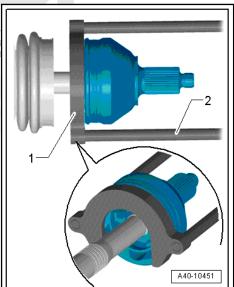


♦ Three-Arm Puller -VAS 251 205- (previously Kukko 45-2)



Outer CV Joint, Removing





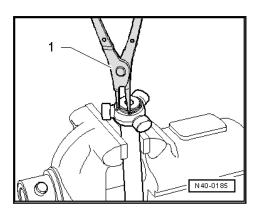
- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Align the Puller Driveshaft -T10382- so that the flat side of the Puller Driveshaft Removing Plate -T10382/1- faces the Puller - Driveshaft - Spindles -T10382/2-.
- Attach the Puller Drive Axle -T10382- to the Slide Hammer Set -VW 771-.
- Remove the CV joint from the drive axle using the Puller -Driveshaft -T10382- and Slide Hammer Set -VW 771-.
- Puller Drive Axle Removing Plate -T10382/1-

Puller - Drive Axle - Spindles -T10382/2-

Outer CV Joint, Installing

- Install the new circlips.
- Slide the new CV boot onto the drive axle if necessary.
- Use a plastic mallet to install it on the shaft until the circlip engages.

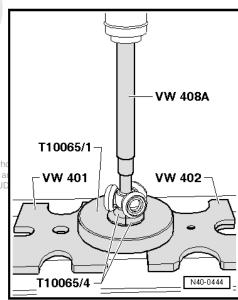
Disassembling



- Open the clamp on the inner joint and slide protective boot back from adapter.
- Remove the joint from the drive axle.
- Remove the circlip.
- 1 Pliers (Commercially Available)
- Insert the drive axle into the press.
- Press the triple roller star off the drive axle.



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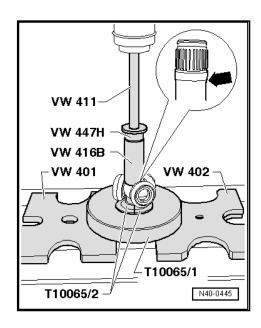


- Pull off CV boot from shaft.
- Clean the shaft, joint and groove for the seal.

Assembling

- Slide the small clamp for the CV boot onto the shaft.
- Slide the CV boot onto the shaft.
- Slide the joint piece onto the shaft.

Triple roller star, conical drive axle, installing:



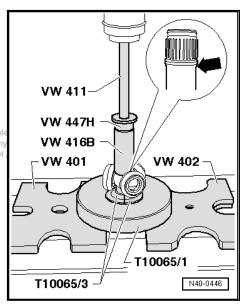
- The chamfer on triple roller star faces toward shaft, this is used as an assembly aid.
- Install the triple roller star all the way onto the shaft.
- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the splines on the drive axle and triple roller star with Lubricant -G 052 142 A2-.
- Insert the circlip while making sure it is seated correctly.
- Press half of the drive axle grease from the repair set into the triple roller joint.
- Slide the joint piece over rollers and secure.
- Press the other half of the drive axle grease from the repair kit into the rear side of the triple roller joint.
- Install the CV boot.

Triple roller star, cylinder drive axle version, installing:



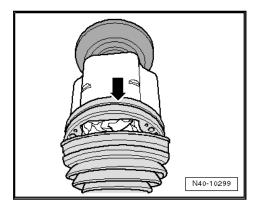
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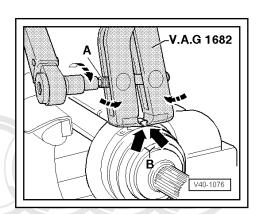
Install the triple roller star all the way onto the shaft.

- Make sure the pressure does not increase above 3.0 t.
- If necessary, coat the splines on the drive axle and triple roller star with Lubricant -G 052 142 A2-.
- Insert the circlip while making sure it is seated correctly.
- Press half of the drive axle grease from the repair set into the triple roller joint.
- Slide the joint piece over rollers and secure.
- Press the other half of the drive axle grease from the repair kit into the rear side of the triple roller joint.
- Slide the CV boot onto the adapter and ensure the boot engages correctly in the groove on the adapter -arrow-.



Mount and tension the clamp until a proper seal is guaranteed.

Tightening clamp on the outer joint



- Attach the Clamping Pliers -V.A.G 1682- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tension the clamp by turning spindle with a torque wrench (without tilting the pliers).
- Tightening specification: 25 Nm.

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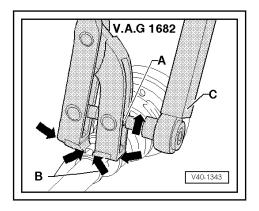




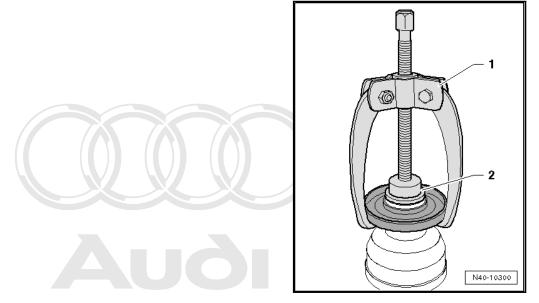
Note

- A stainless steel clamp must be used due to hardness of CV boot material (compared to rubber). This clamp can only be tensioned using Clamping Pliers -V.A.G 1682 A-.
- ♦ Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS2 grease, if necessary.
- ♦ If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.

Tension the clamp on the small diameter

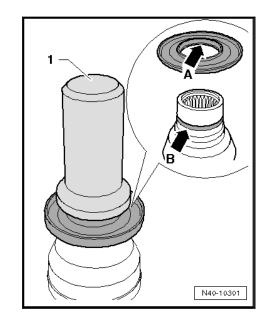


Removing the cap from the triple roller joint



- Three-Arm Puller: VAS:251n205 ing for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- Press Piece Multiple Use WWc447 (Haformation in this document. Copyright by AUDI AG.

Mounting the cap onto the triple roller joint

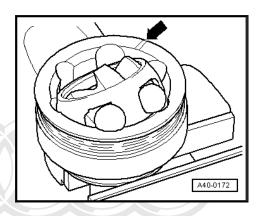


- Seal Installer Bevel Box -T10243-
- Mount the cap far enough onto the joint until the ridge -arrow A- fits into the groove -arrow B-.

6.6 Outer CV Joint, Checking

It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

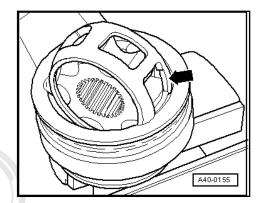
Removing



- Before disassembling, mark the ball hub position in relation to the ball cage and housing with an electric engraver or sharpening stone -arrow-.
- Tilt the ball hub and the ball cage and remove the balls one after another.
- Turn the cage until two cage windows -arrow- rest on joint housing.

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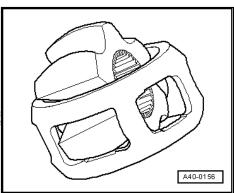




- Lift out cage with hub.
- Swing a hub segment in a cage window.



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Fold hub out from cage.



Note

- The balls for each joint belong to one tolerance group. Check the axle stub, hub, cage and balls for small depressions (pitting build-up) and chafing.
- Excessive backlash in the joint is noticeable by a thump during load alternations. The joint should be replaced in these cases.
- Flattening and running marks on the balls are no reason to replace a joint.

Installing

Install in the reverse order of removal, while noting the following:

Insert cage with hub into joint body.



Note

Cage must be inserted on the correct side.

- Press in the opposite facing balls one after the other, and the old ball hub position to the ball cage and to the joint housing must be replicated.
- Install the new circlip in the shaft.

6.7 Inner CV Joint, Checking

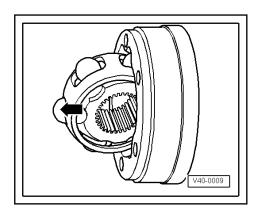
It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.



Note

Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

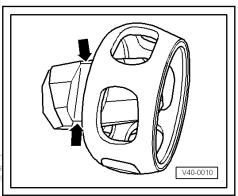
Removing



- Tilt the ball hub and ball cage.
- Remove the joint in the direction of the arrow.
- Remove the balls from the cage.
- Flip out ball hub from ball cage via the ball race -arrows-.



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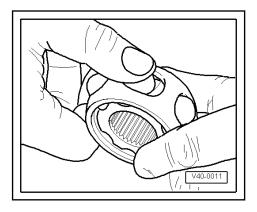
Check the joint, ball hub, ball cage and balls for small broken off depressions (pitting) and chafing.



Note

Excessive backlash in joint will be noticed as a knock during load changes. Joint must be replaced in such cases. Flattening and running marks on the balls are no reason to replace the joint.

Installing



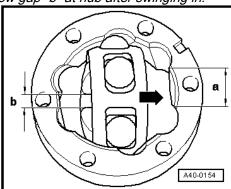
Install in the reverse order of removal while noting the following:

- Insert the ball hub into the ball cage via two chamfers. The installation position is arbitrary. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.



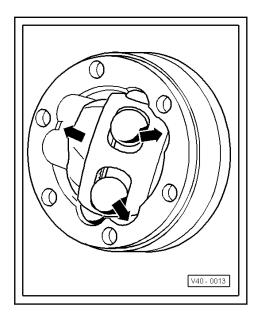
Note

When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.

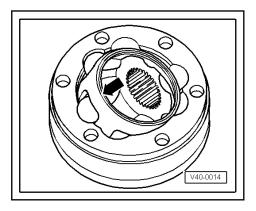


- Chamfer on inner diameter of ball hub (splines) must face the large diameter of the joint.
- ♦ Use the felt-tip pen markings made during removal to help with assembly.
- Swing in ball hub, to do so swing out hub far enough it and I ado a cage arrows- so that the balls have the distance of the distance of the distance of the lation in this document. Copyright by AUDI AG. running paths.





Swing in hub with balls by pressing forcefully onto cage -arrow-.



CV joint, checking for function:

The CV joint is properly assembled, if the ball hub can be slid back and forth by hand over the entire length adjustment.



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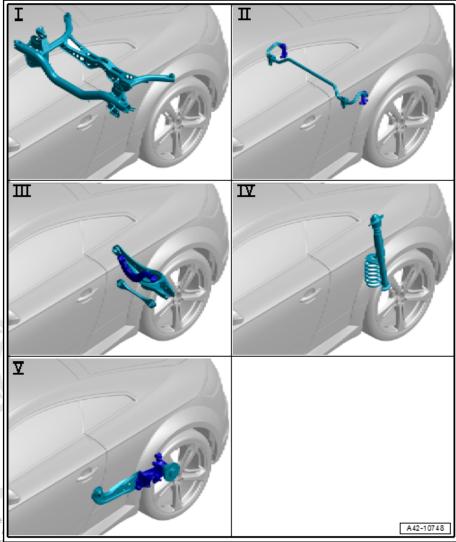
Rear Suspension

Rear axle

- ⇒ -1.1 Rear Axle", page 135
- ⇒ A1.2 xle, Removing and Installing", page 136
- 1.1 Overview - Rear Axle
- ⇒ -1.1.1 Rear Axle, FWD Vehicles", page 135
- ⇒ -1.1.2 Rear Axle, AWD Vehicles", page 135

Overview - Rear Axle, FWD Vehicles 1.1.1

- I Refer to ⇒ 2 , page 146
- II Refer to ⇒ B3 ar", page
- III Refer to ⇒ A4 rm, Tie Rod", page 174
- IV Refer to ⇒ S5 trut, Shock Absorber, Spring", page 184
- V Refer to ⇒ <u>B6 earing and</u> <u>Trailing Arm", page 195</u>



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1.1.2 Overview - Rear Axle, AWD Vehicles

I - Refer to ⇒ 2, page 146

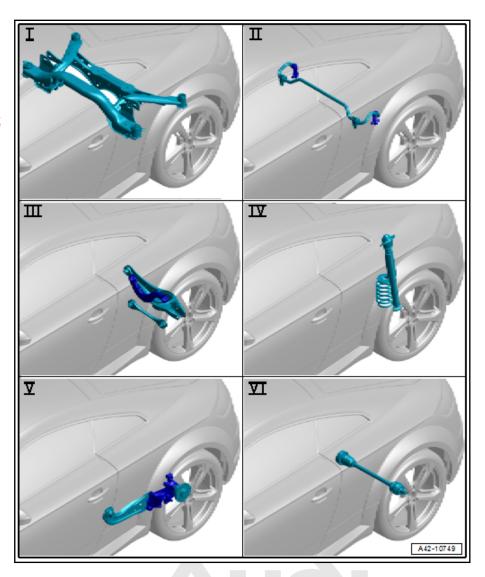
II - Refer to ⇒ B3 ar", page

III - Refer to ⇒ A4 rm, Tie Rod", page 174

IV - Refer to <u>⇒ S5 trut, Shock</u> Absorber, Spring", page 184

V - Refer to ⇒ <u>B6 earing and</u> <u>Trailing Arm", page 195</u>

VI - Refer to <u>⇒ A7 xle", page</u> <u>231</u>



1.2 Rear Axle, Removing and Installing

⇒ A1.2.1 xle, Removing and Installing, FWD Vehicles" page. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability ne correctness of information in this document. Copyright by AUDI AG.

⇒ A1.2.2 xle, Removing and Installing, AWD Vehicles", page

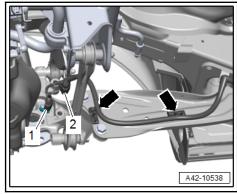
1.2.1 Rear Axle, Removing and Installing, **FWD Vehicles**

Special tools and workshop equipment required

Removing the subframe and its attachments

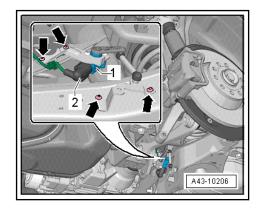
- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11
- Remove the rear wheels. Refer to <u>⇒ a1 nd Tires</u>", page 255.
- Disconnect the left and right connector -1- from the ABS speed sensor and free up the wire.





- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not **Disconnect the tright and tleft electromechanical parking** antee or accept any liability brake connection 2 from the brake caliper in
- Remove and free up the wiring harness from the retainers -arrows-.

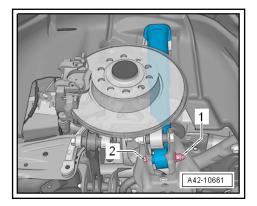
Applies to vehicles with a level control system sensor



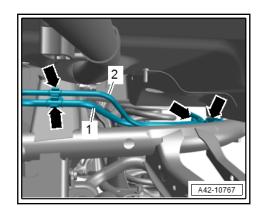
- Disconnect the connector -2- from the left rear level control system sensor -1- and, if necessary, from the right sensor.
- To avoid damaging the level control system sensor, remove the bolts -lower arrows- from the linkage for the level control system sensor.
- Free up the level control system sensor wire on the subframe.

Applies to all

- Remove the springs. Refer to ⇒ R5.4 emoving and Installing", page 192
- Remove the left and right nut -1- and remove the bolt -2-.



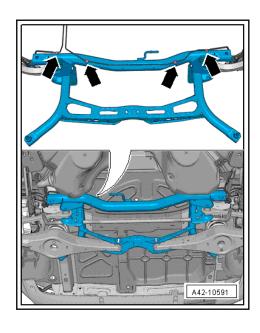
Unclip the breather lines -1 and 2- -arrows-.



Unclip the brake line from both sides -arrows-.



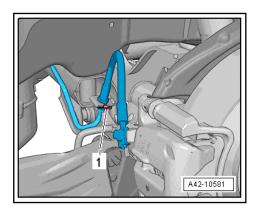
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Note

- The clips will get damaged while doing this and will have to be replaced.
- For better illustration, the subframe is shown from above and is removed.
- Remove the clamps -1- on both sides of the vehicle.



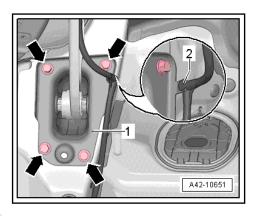
Free up the brake lines from the bracket.



Note

Do not disconnect the brake line.

- Remove the left and right brake caliper. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes, Brake Caliper, Removing and Installing.
- Remove the muffler. Refer to ⇒ Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- Remove the underbody trim panels. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- Unclip and free up the wire -2- on the mounting bracket -1-.

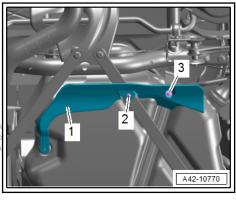


- Mark the mounting bracket installation location on the body.
- Remove the bolts -arrows-

Applies to Audi TT Roadster



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Remove the nut -3- for the diffuser -1- on the fuel tank.



Note

Ignore -item 2-.

Remove the rear diagonal braces. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Diagonal Braces, Removing and Installing.

Applies to all

- Secure the subframe. Refer to <u>⇒ S2.2 ecuring</u>", page 150.
- Lower the subframe with attachments.



Note

When lowering, ensure the brake lines and wires have sufficient clearance.

Subframe with Attachments, Installing

Install in the reverse order of removal while noting the following:

Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- OBD-capable systems
- Electronic Damping Control Module -J250
- Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.
- Evaluate if an axle alignment is needed. Refer to <u>⇒ f2.2 or</u> Axle Alignment, Evaluating", page 257.

Tightening Specifications

- Refer to ⇒ -2.1.1 Subframe, FWD Vehicles", page 146
- Refer to ⇒ -6.2 Trailing Arm", page 199
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring' page 184
- Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- purposes, in part or in whole, is not Refer to ⇒ Engine Mechanical in Rep. b Grun 26; Exhaust Pipes/arantee or accept any liability Mufflers; Overview wit Muffler to the correctness of information in this document. Copyright by AUDI AG.
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- Refer to ⇒ a1 nd Tires", page 255

1.2.2 Rear Axle, Removing and Installing, AWD Vehicles

Removing the subframe and its attachments

 Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.

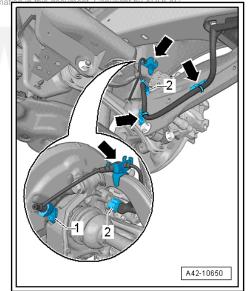


Note

The vehicle must be resting on it wheels during any subsequent work where the drive axle collar bolt must be loosened. Loosen the connection between the drive axle and wheel hub. Refer to ⇒ A7.2 xle Threaded Connection, Loosening and Tightening", page 233.

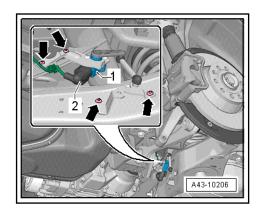
- Remove the rear wheels. Refer to ⇒ a1 nd Tires", page 255.
- Disconnect and free up the right and left connector -1- from
 the ABS speed sensor.

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- Disconnect the right and left electromechanical parking brake connector -2- from the brake caliper.
- Remove and free up the wiring harness from the retainers -arrows-.

Applies to vehicles with a level control system sensor

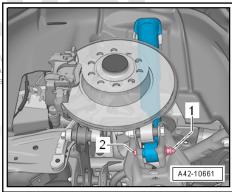


- Disconnect the connector -2- from the left rear level control system sensor -1- and, if necessary, from the right sensor.
- To avoid damaging the level control system sensor, remove the bolts -lower arrows- from the linkage for the level control system sensor.
- Free up the level control system sensor wire on the subframe.

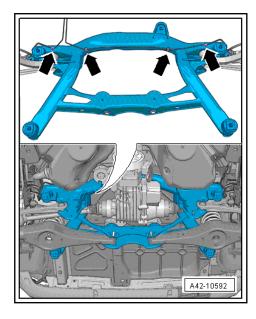
Applies to all

- Remove the springs. Refer to ⇒ R5.4 emoving and Instal-
- Remove the nut -1- and the bolt -2-.





Unclip the brake line from both sides -arrows-.



Unclip the EVAP canister breather line on the right side from the clips.

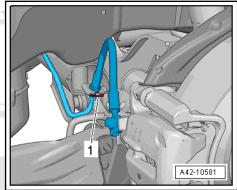


Note

The clips will get damaged while doing this and will have to be replaced.

Remove the clamps -1- on both sides of the vehicle.





- Free up the brake lines from the bracket.

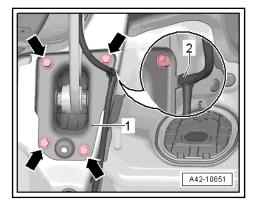
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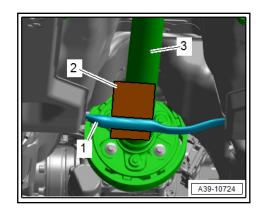
Note

Do not disconnect the brake line.

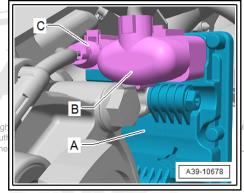
- Remove the right and left brake caliper. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- Remove the muffler. Refer to ⇒ Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
- Remove the underbody trim panels. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview Underbody Trim Panels.
- Unclip and free up the wire -2- on the mounting bracket -1-.



- Mark the mounting bracket -1- installation position on the body.
- Remove the bolts -arrows-.
- Remove the rear driveshaft tube with the flexible disc and vibration damper from the rear final drive. Refer to ⇒ Rear Final Drive; Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing .



- Support the driveshaft -3- at the tunnel brace -1- using a wooden block -2-.
- Slide the rear driveshaft tube as far as possible in the direction of the transmission.
- Disconnect the connector -B- on the All-Wheel Drive Control Module -J492- -item A-.



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- Secure the subframe. Refer to <u>⇒ S2.2 ecuring</u>", page 150.
- Carefully lower subframe with components.



Note

Make sure there is enough clearance for brake lines, wires and the driveshaft centering pin when lowering.

Subframe with Attachments, Installing

Install in the reverse order of removal while noting the following:



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- Always install all bolts by hand for the first few turns.
- Tighten the threaded connections in the curb weight position. Refer to <u>⇒ B3.16 earing in Curb Weight Position, Lifting</u> Vehicles with Coil Spring", page 11.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the \Rightarrow Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnos-
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- OBD-capable systems
- 14 Electronic Damping Control Module -J250
- 14 Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257

Tightening Specifications

- Refer to ⇒ -2.1.2 Subframe, AWD Vehicles", page 148
- Refer to ⇒ -6.2 Trailing Arm", page 199
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Differential. Refer to ⇒ Rear Final Drive; Rep. Gr. 39; All-Wheel Drive Clutch; Overview - All-Wheel Drive Clutch.
- Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.
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- Refer to \Rightarrow Body Exterior; Rep. Gr. 66; Undited by Body Exterior; Rep. 67; Re el; Overview - Underbody Trim Panels.
- Refer to ⇒ a1 nd Tires", page 255

2 Subframe

- ⇒ -2.1 Subframe", page 146
- ⇒ S2.2 ecuring", page 150
- ⇒ S2.3 ervicing", page 156

2.1 Overview - Subframe

- ⇒ -2.1.1 Subframe, FWD Vehicles", page 146
- ⇒ -2.1.2 Subframe, AWD Vehicles", page 148

2.1.1 Overview - Subframe, FWD Vehicles



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1 - Bolt

Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosened or tightened with an impact wrench.

Allways install all bolts by hand for the first few turns.

☐ 70 Nm + 180°

2 - Bolt

☐ Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosened or tightened with an impact wrench.

Mways install all bolts by hand for the first few turns.



3 - Bolt

Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosened or tightened with an impact wrench

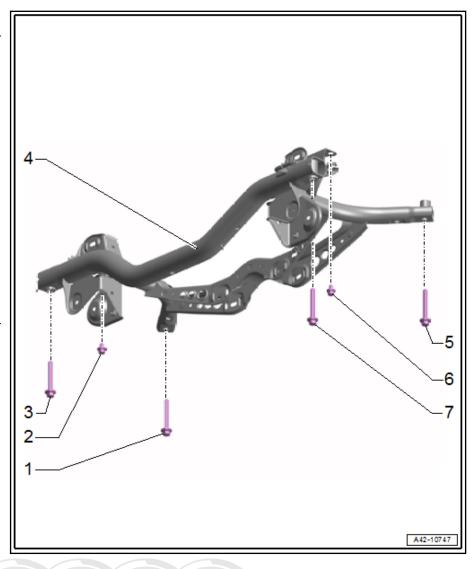
Always install all bolts by hand for the first few turns.

4 - Subframe

☐ 70 Nm + 180°

☐ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.

Subframe with Attachments, Removing and Installing, Refer to ⇒ A1.2.1 xle, Removing and Installing, FWD Vehicles", page 136.



5 - Bolt

Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosened or tightened with an impact wrench.

*A*llways install₁all₁bolts⊧ by hand for the first few turns.

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□ 70 Nm + 180°

6 - Bolt

Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosened or tightened with an impact wrench.

Nways install all bolts by hand for the first few turns.

□ 50 Nm +45°

7 - Bolt

□ Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body. The subframe bolts on the body must not be loosenéd or tightened with an impact wrench.

Allways install all bolts by hand for the first few turns.

□ 70 Nm + 180°

2.1.2 Overview - Subframe, AWD Vehicles

- 1 Crossbrace
- 2 Bolt
 - □ 40 Nm
- 3 Pop Rivet Nut
- 4 Bolt
 - □ 40 Nm
- 5 Pop Rivet Nut
- 6 Subframe
 - □ Subframe with Attachments, Removing and Installing. Refer to ⇒ A1.2.2 xle, Removing and Installing, AWD Vehicles", page 141.

7 - Rear Bonded Rubber Bushing

- Only for Audi TT Coupe
- Replacing. Refer to ⇒ B2.3.1 onded Rubber Bushing on Subframe, Replacing, AWD Vehicles", page 156.

8 - Bolt

Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

The subframe bolts on the body must not be loosened or tightened with an impact wrench.

Always install all bolts by hand for the first few turns.

☐ 70 Nm + 180°

9 - Front Bonded Rubber Bushing

- Only for Audi TT Coupe
- \square Replacing. Refer to \Rightarrow B2.3.1 onded Rubber Bushing on Subframe, Replacing, AWD Vehicles", page 156.

10 - Bolt

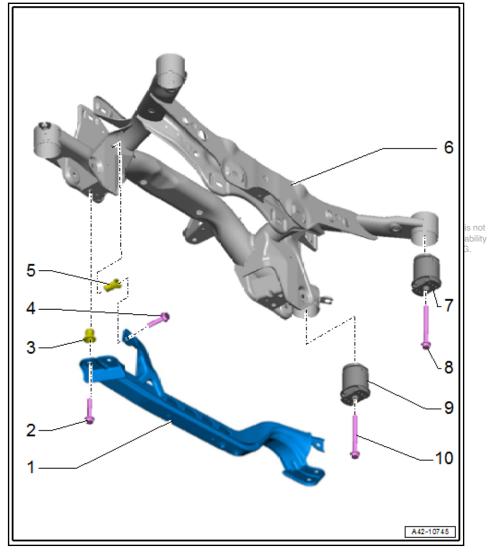
- Only for Audi TT Coupe
- □ Always replace after removing



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

The subframe bolts on the body must not be



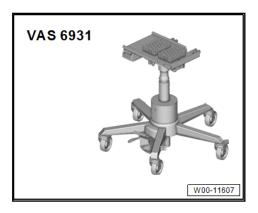
Allways install all bolts by hand for the first few turns.

☐ 70 Nm + 180°

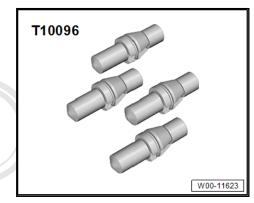
Subframe, Securing 2.2

Special tools and workshop equipment required

♦ Engine and Gearbox Jack -VAS 6931-

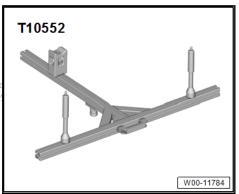


♦ Locating Pins -T10096-

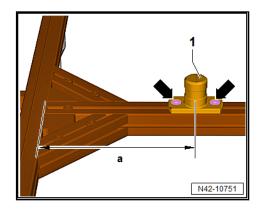


Rear Axle Support -T10552-





Tool Preparation

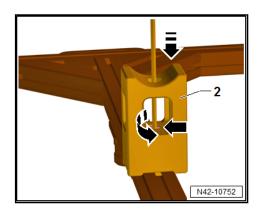


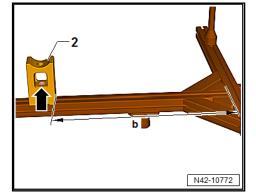
- Loosen the bolts -arrows-.
- Adjust the dimension -a-.
- Dimension -a- = 250 mm (9.84 in.).
- Tighten the bolts to 10 Nm again.
- Loosen the bolt -arrow-.





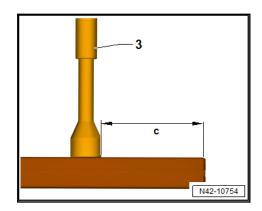
- Turn the Rear Axle Support Support -T10552/2- -2- so that the profile is perpendicular to the direction of travel.
- Adjust the dimension -b-.



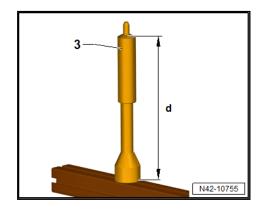


- FWD vehicles -b- = 270 mm (10.63 in.).
- AWD vehicles -b- = 410 mm (16.14 in.).
- Tighten the bolt -arrow- again to 10 Nm.
- Loosen the left and right lower Rear Axle Support Locating Bores -T10552/1- -item 3-.

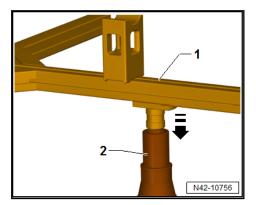




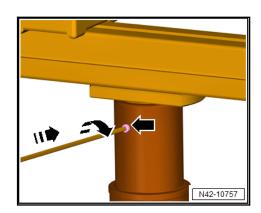
- Adjust the dimension -c-.
- Dimension de at \$470 mm (1/85) in)AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Turn the left and right threaded sleeve from the Rear Axle Support Locating Bores -T10552/1- -item 3- until the dimension -d- is reached.



- Dimension -d- = 190 mm (7.48 in.).
- Place the Rear Axle Support -T10552- -item 1- on the Engine and Gearbox Jack -VAS 6931- -item 2-.



- Retighten the bolt -right arrow-:

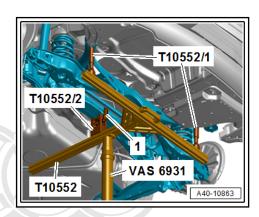


- ♦ M6 5 Nm
- M8 10 Nm

Procedure

- Remove the muffler. Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
- Remove the springs. Refer to ⇒ R5.4 emoving and Installing", page 192

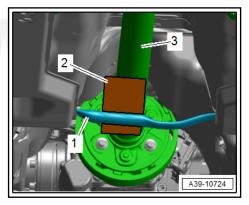
FWD vehicles



- Bring the prepared Rear Axle Support T10552- with the Engine and Gearbox Jack -VAS 6931- to rest on the crossbrace.
- The Mounting Pins -T10552/1- engage in the holes on the back of the subframe.
- Secure the subframe with the rear axle support tensioning strap.

AWD vehicles

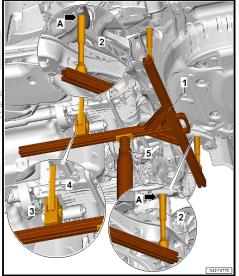
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Remove the rear driveshaft tube with the flexible disc and vibration damper from the rear final drive. Refer to ⇒ Rear Final Drive; Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.

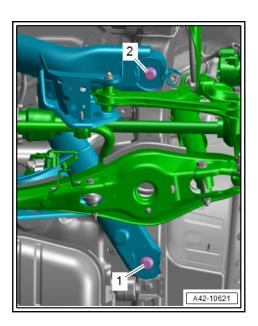
- Support the driveshaft -3- at the tunnel brace -1- using a wooden block -2-.
- Slide the rear driveshaft tube as far as possible in the direction of the transmission.
- Position the Rear Axle Support -T10552- -item 1- with the Engine and Gearbox Jack -VAS 6931- -item 5- under the subframe and lift.

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- Insert the Rear Axle Support Locating Bores -T10552/1--item 2- in the holes on the subframe -A arrows-.
- Secure the Rear Axle Support Support -T10552/2- -item 3on the subframe using the tensioning strap -4-.

Continuation for All



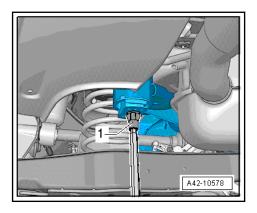
To secure the subframe, the Locating Pins -T10096- must be installed on the left and right side at the positions -1- one after the other. (shown on an AWD vehicle).



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- ♦ Always install all bolts by hand for the first few turns.
- Remove a bolt from -1- for the subframe.
- Install the locating pin -1- from the Locating Pins -T10096and tighten to a maximum 20 Nm.



- Repeat procedure for the second front bolt and the rear subframe bolts.
- The subframe position is now secured.

Remove the Locating Pins -T10096-.

Removal is performed in the reverse order. Note the following:

Only remove one locating pin diagonally and install a new locating pin in this location and tighten.



Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- Always install all bolts by hand for the first few turns.



WARNING

If vehicle will be driving on the streets, all screws and nuts at or in whole, is not must be tightened properly! thorised by AUDI AG. AUDI AG does not guarantee of

accept any liability

- Install the springs. Refer to ⇒ R5.4 emoving and Installing", <u>page 192</u> .
- Install the driveshaft. Refer to ⇒ Rear Final Drive; Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.

A road test must be performed after completing repairs. If the steering wheel is crooked, the wheels must be aligned. Refer to ⇒ A2 lignment", page 256.

Tightening Specifications

- Refer to ⇒ -2.1 Subframe", page 146
- Refer to \Rightarrow Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview Muffler.

2.3 Subframe, Servicing

⇒ B2.3.1 onded Rubber Bushing on Subframe, Replacing, AWD Vehicles", page 156

⇒ B2.3.2 onded Rubber Bushing on Subframe, Replacing, AWD <u>Vehicles", page 161</u>

2.3.1 Front Bonded Rubber Bushing on Subframe, Replacing, AWD Vehicles by copyright. Copying for private or commercial purposes, in part or in whole, is not frame, Replacing, AWD Vehicles a authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Note

- If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.
- Check the other bushings before replacing a faulty bonded rubber bushing.
- If there are any tears or other visible damages, replace the bonded rubber bushing.
- Identify the installation position to the subframe before removing the bonded rubber bushing.

Special tools and workshop equipment required

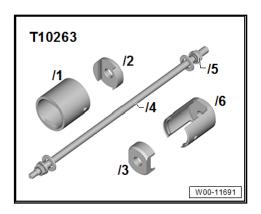
Hydraulic Press -VAS 6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-



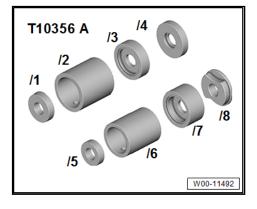
Pneumatic/Hydraulic Foot Pump -VAS 6179-



Hydraulic Press - Rear Subframe Bushing Tool Kit -T10263-



♦ Subframe Bushing Assembly Tool Kit -T10356A-

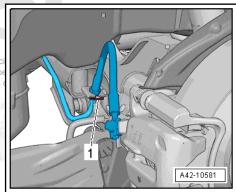


 Assembly paste. Refer to the ⇒ Electronic Parts Catalog (ETKA).

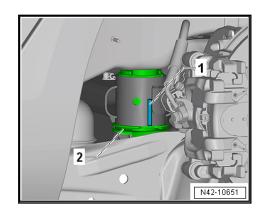
Removing

- Before starting the procedures, determine the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, <u>Lifting Vehicles with Coil Spring</u>", page 11.
- Remove the wheels. Refer to <u>⇒ a1 nd Tires</u>", page <u>255</u>.
- Remove the clamps -1- on both sides of the vehicle.

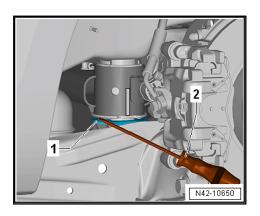
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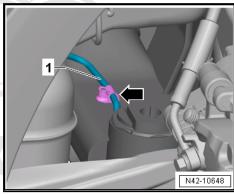
- Free up the brake line from the bracket and disconnect the brake line.
- Secure the subframe. Refer to ⇒ S2.2 ecuring", page 150.
- Mark the installation location of the bonded rubber bushing on the subframe with a felt-tip pen -1-.



- Apply the mark -1- on the subframe in the middle of the recess on the bonded rubber mounting -2-.
- Pry out the anti-twist mechanism -1- in the area of the retaining tabs for example with a screwdriver -2- from the bonded rubber bushing.

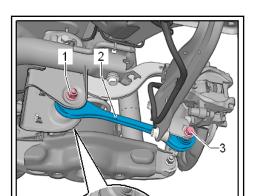


Free up the brake line -1- on the left side -arrow- the clip will be destroyed at the same time.

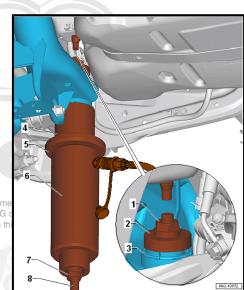


- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not Slightly lower the subframe with the Engine and Gearbox G. AUDI AG does not guarantee or accept any liability Jack -VAS 6931- approximately 100 mm (3!94 in).
- Remove the bolt -3- and press the tie rod toward the rear.

A42-10663



- Position the special tool as shown.



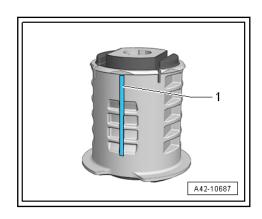
- Protected by copyright. Copying for private or comm permitted unless authorised by AUDI AG. AUDI AG with respect to the correctness of information in the
- 1 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 2 Subframe Bushing Assembly Tool Kit Press Piece -T10356/1-
- 3 Subframe
- $\bf 4$ Subframe Bushing Assembly Tool Kit-Pipe -T10356/2-, side with shoulder points to subframe
- 5 Bearing Installer Wheel Hub/Bearing Kit 1 -T10205/1-
- 6 Hydraulic Press -VAS 6178- with Bearing Installer Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
- 7 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 8 Hydraulic Press Rear Subframe Bushing Tool Kit-Spindle -T10263/4-
- Pretension the special tools.
- Press out the bonded rubber bushing.

TIP:

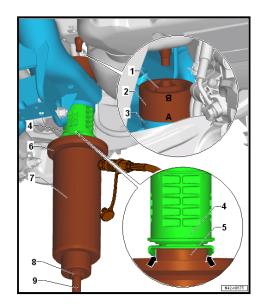
When removing the bonded rubber bushing, the outer race collar on the bushing is sheared off. There is a loud crack when this happens.

After removing the bonded rubber bushing, it must be removed from the Tube -T10356/2- by tapping lightly with a hammer.

Installing



- A mark -1- must be applied to the new bonded rubber bushing to help mount it.
- Apply mounting paste to the outer edge of the bonded rubber bushing.
- Attach the special tool with the bonded rubber bushing.



- 1 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 2 Subframe Bushing Assembly Tool Kit-Thrust piece T10356/7-, the mark »A« points to the subframe
- 3 Subframe
- 4 Align the bonded rubber bushing with the markings made previously tearrows by (the markings rieed to align) poses, in part or in whole, is not guarantee or accept any liability
- 5 Assembly Fool to Bushing T10356/8-in the flattened sides AUDI AG. need to fit into the cover of the bonded rubber bushing -arrows-.
- 6 Bearing Installer Wheel Hub/Bearing Kit 1 -T10205/1-

- 7 Hydraulic Press -VAS 6178- with Bearing Installer Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
- 8 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 9 Hydraulic Press Rear Subframe Bushing Tool Kit-Spindle -T10263/4-
- Check the position of the bonded rubber bushing and, if necessary, align and pre-tighten special tools with bonded rubber bushing.
- Make sure that the hose from the Hydraulic Press -VAS 6178- to the Pneumatic/Hydraulic Foot Pump -VAS 6179runs between the trailing arm and the fuel tank when installed.
- So that the outer race is not damaged, make sure that the bonded rubber bushing is not bent when installing
- Operate the pump to press in the bonded rubber bushing until the collar is positioned on the subframe »without play«.

Install in reverse order of removal. Note the following:

- Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

Tightening Specifications

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- ◆ Refer to ⇒ -2.1.2 Subframe, AWD Vehicles", page if 48 nless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Refer to ⇒ -4.2 Tie Rod", page 176
- Refer to ⇒ a1 nd Tires", page 255

2.3.2 Rear Bonded Rubber Bushing on Subframe, Replacing, AWD Vehicles



Note

- ♦ If a bonded rubber bushing is faulty, then the bonded rubber bushing on the opposite side must also be replaced. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.
- Check the other bushings before replacing a faulty bonded rubber bushing.
- If there are any tears or other visible damages, replace the bonded rubber bushing.
- Identify the installation position to the subframe before removing the bonded rubber bushing.

Special tools and workshop equipment required

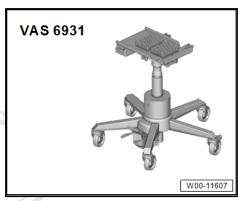
Hydraulic Press -VAS 6178- with Bearing Installer - Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-



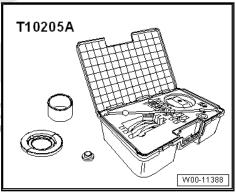
Pneumatic/Hydraulic Foot Pump -VAS 6179-



Engine and Gearbox Jack -VAS 6931-

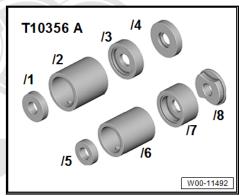


Bearing Installer - Wheel Hub/Bearing Kit - 1 -T10205/1-from the Bearing Installer - Wheel Hub/Bearing Kit - T10205A-



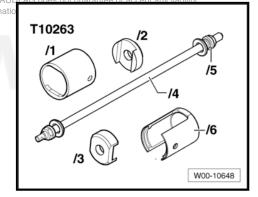
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Subframe Bushing Assembly Tool Kit -T10356A-



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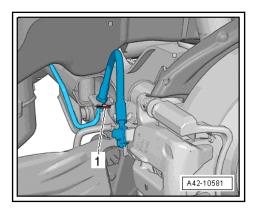
♦ Hydraulic Press - Rear Subframe Bushings I ool Kit of 19263 Informatio



 Refer to ⇒ Electronic Parts Catalog (ETKA) for the assembly paste.

Removing

- Remove the wheels. Refer to ⇒ a1 nd Tires", page 255.
- Secure the subframe. Refer to ⇒ S2.2 ecuring", page 150.
- Remove the clamps -1- on both sides of the vehicle.



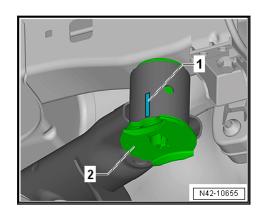
Free up the brake lines from the bracket.



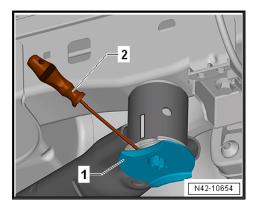
Note

Do not disconnect the brake line.

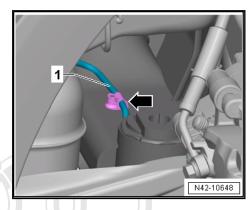
Mark the installation location of the bonded rubber bushing
 -2- on the subframe with a felt-tip pen -1-.



Pry out the anti-twist mechanism -1- in the area of the retaining tabs for example with a screwdriver -2- from the bonded rubber bushing.



Free up the brake line -1- on the left side -arrow-; this will destroy the clip.

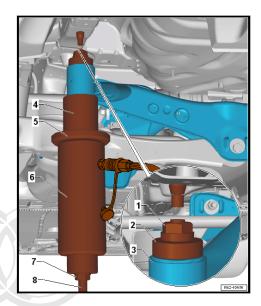


- Slightly lower the subframe with the Engine and Gearbox Jack -VAS 6931- approximately 100 mm (3.94 in.).
- Position the special tool as shown.



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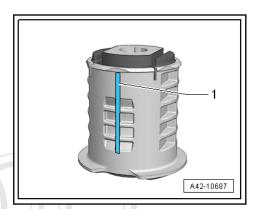
- 1 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 2 Thrust Piece -T10356/5-
- 3 Subframe
- 4 Subframe Bushing Assembly Tool Kit-Pipe -T10356/6-, side with shoulder points to subframe or commercial purposes, in part or in whole, is not
- 5 Bearing Installer Wheel Hub/Bearing Kitrectles J 10205/Jon in this document. Copyright by AUDI AG.
- 6 Hydraulic Press -VAS 6178- with Bearing Installer Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
- 7 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 8 Hydraulic Press Rear Subframe Bushing Tool Kit-Spindle -T10263/4-
- Pretension the special tools.
- Press out the bonded rubber bushing.



Note

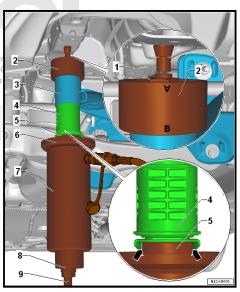
- When removing the bonded rubber bushing, the outer race collar on the bushing is sheared off. There is a loud crack when this happens.
- ♦ After removing the bonded rubber bushing, it must be removed from the Tube -T10356/2- by tapping lightly with a hammer.

Installing



- Apply a mark -1- on the new bonded rubber bushing for help with installation.
- Apply mounting paste to the outer edge of the bonded rubber bushing.
- Attach the special tool with the bonded rubber bushing.

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- 1 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 2 Assembly Tool Bushing -T10356/7-. the marking »B« points to the subframe
- 3 Subframe
- 4 Align the bonded rubber bushing with the markings made previously -arrows- (the markings need to align).
- 5 Assembly Tool Bushing -T10356/8-, the flattened sides need to fit into the cover of the bonded rubber bushing -arrows-.
- 6 Bearing Installer Wheel Hub/Bearing Kit 1 -T10205/1-
- 7 Hydraulic Press -VAS 6178- with Bearing Installer Wheel Hub/Bearing Kit- Adapter 13 -T10205/13-
- 8 Hydraulic Press Rear Subframe Bushing Tool Kit Nut -T10263/5-
- 9 Hydraulic Press Rear Subframe Bushing Tool Kit-Spindle -T10263/4-

- Check the position of the bonded rubber bushing and, if necessary, align and pre-tighten special tools with bonded rubber bushing.
- Operate the pump to press in the bonded rubber bushing until the collar is positioned on the subframe »without play«.
 While pulling in, make sure the bonded rubber bushing does not tilt, otherwise the outer ring could be damaged.

Install in reverse order of removal. Note the following:

 Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

Tightening Specifications

- ◆ Refer to ⇒ -2.1 Subframe", page 146
- ◆ Refer to ⇒ a1 nd Tires", page 255

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3 Stabilizer Bar

- ⇒ -3.1 Stabilizer Bar", page 168
- ⇒ B3.2 ar, Removing and Installing", page 168
- ⇒ R3.3 od, Removing and Installing", page 170

3.1 Overview - Stabilizer Bar

1 - Stabilizer Bar

- With rubber bushings
- □ Removing and Installing. Refer to ⇒ B3.2 ar, Removing and Installing", page 168

2 - Coupling Rod

□ Removing and Installing. Refer to ⇒ R3.3 od, Removing and Installing", page 170

3 - Lower Transverse Link

4 - Nut

- ☐ Always replace after removing
- □ 20 Nm +180°

5 - Bolt

□ Always replace after removing

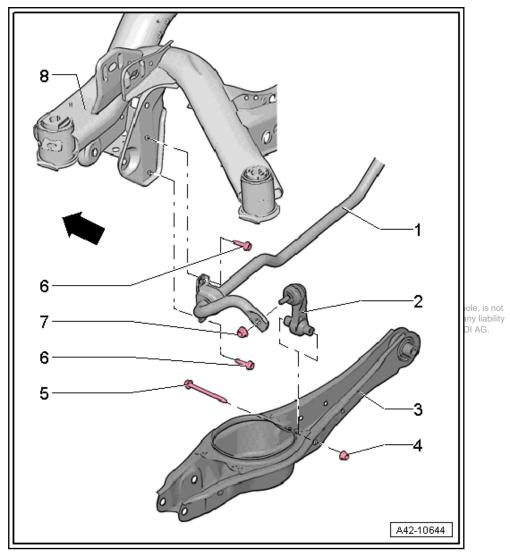
6 - Bolt

- Install evenly
- ☐ Always replace after removing
- □ 20 Nm +90°

7 - Nut

- Counterhold at connecting link socket head when tightening
- □ 55 Nm

8 - Subframe



3.2 Stabilizer Bar, Removing and Installing

Special tools and workshop equipment required

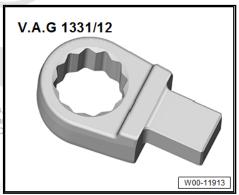
◆ Torque Wrench, 6-50Nm -VAG 1331A-



 Torque Wrench 1331 Insert - Ring Wrench - 16mm -V.A.G 1331/12-



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Note

- When loosening or tightening the nut to secure the coupling rod to the stabilizer bar, counterhold on the respective coupling rod stud to prevent it from rotating.
- ◆ The counterhold tool must not be tilted.

Removing

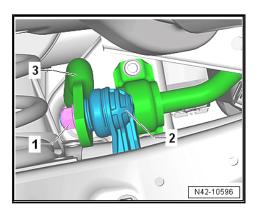
Applies to Audi TT Roadster

- Remove the right rear wheel. Refer to ⇒ a1 nd Tires", page 255.
- Remove the right rear coil spring. Refer to ⇒ R5.4 emoving and Installing", page 192.

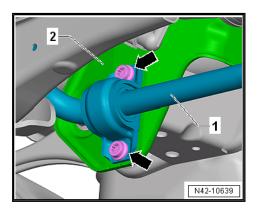
Applies to Audi TT Coupe

Remove the muffler and set aside. Refer to ⇒ Rep. Gr. 26;
 Exhaust Pipes/Mufflers; Overview - Muffler.

Applies to all



- Remove the left and right nut -1-.
- Remove the coupling rod -2- from the stabilizer bar -3-.
- Remove the left and right bolts -arrows-.



Remove the stabilizer bar -1- from the subframe -2-.

Applies to Audi TT Roadster

- Guide out the stabilizer bar to the right side.

Install in the reverse order of removal while noting the following:

- Tighten the stabilizer bar bolts evenly on the subframe.

Tightening Specifications

- Refer to ⇒ -3.1 Stabilizer Bar", page 168
- Refer to ⇒ -6.1 Wheel Bearing", page 195
- Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler.

3.3 Coupling Rod, Removing and Installing

Special tools and workshop equipment lequiles authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

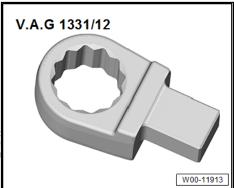
◆ Torque Wrench, 6-50Nm -VAG 1331A-



 Torque Wrench 1331 Insert - Ring Wrench - 16mm -V.A.G 1331/12-



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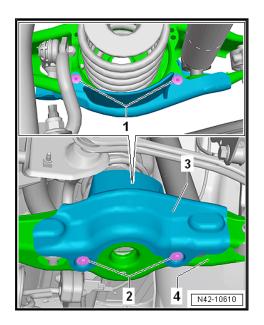
Note

- When loosening or tightening the nuts to secure the coupling rod to the stabilizer bar, counterhold on the respective coupling rod stud to prevent it from rotating.
- ◆ The counterhold tool must not be tilted.

Removing

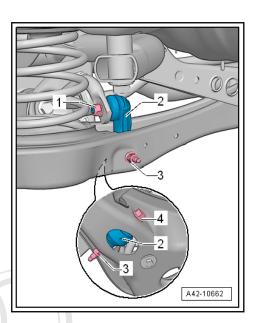
- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ <u>B3.16 earing in Curb Weight Position</u>, <u>Lifting Vehicles with Coil Spring</u>", page <u>11</u>.
- Remove the wheel. Refer to <u>⇒ a1 nd Tires</u>", page <u>255</u>.

Applies to vehicles with stone chip protection



- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Applies to all



- Remove the nuts -1 and 3- and the bolt -4-.
- Remove the coupling rod -2- from the stabilizer bar and control arm.



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Installing



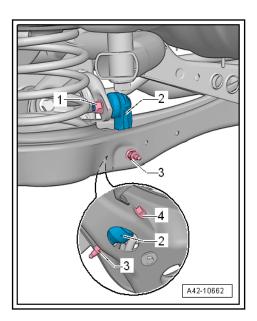
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Install in the reverse order of removal while noting the following:

- Insert the coupling rod -2-, install the nuts -1 and 3- and tighten in curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring",
- When tightening the nut -1-, counterhold at the inner multipoint fitting of the bolt.

Tightening Specifications

- Refer to ⇒ -3.1 Stabilizer Bar", page 168
- ◆ Refer to <u>⇒ a1 nd Tires</u>", page 255



Control Arm, Tie Rod 4

- ⇒ -4.1 Transverse Link", page 174
- ⇒ -4.2 Tie Rod", page 176
- ⇒ T4.3 ransverse Link, Removing and Installing", page 177
- ⇒ T4.4 ransverse Link, Removing and Installing", page 179
- ⇒ R4.5 od, Removing and Installing", page 182

4.1 Overview - Transverse Link



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1 - Eccentric Screw

- Perform a vehicle alignment after loosening.
 Refer to ⇒ A2 lign-ment", page 256.
- Do not turn more than 90° right or left (that is smallest to largest possible adjustment)

2 - Subframe

3 - Eccentric Washer

Inner hole with tab

4 - Nut

- Always replace after removing
- □ Tighten the threaded connections in curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- □ 95 Nm without Insert Tool 18mm -T10179-
- □ 80 Nm with Insert Tool - 18mm -T10179-

5 - Eccentric Screw

- Perform a vehicle alignment after loosening.
 Refer to ⇒ A2 lignment", page 256.
- Do not turn more than 90° right or left (that is the smallest to largest possible adjustment)

6 7 8 9 10 11 -12 -13 -14 -15 -16 3 -17 -18 -19

6 - Eccentric Washer

Inner hole with tab

7 - Nut

- □ Always replace after removing
- ☐ Tighten the threaded connections in curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- □ 95 Nm

8 - Upper Transverse Link

- ☐ The transverse link for a FWD vehicle is illustrated
- □ Removing and Installing. Refer to ⇒ T4.3 ransverse Link, Removing and Installing", page 177.

9 - Nut

□ Always replace after removing

10 - Washer

11 - Washer

□ For AWD vehicles only

12 - Bolt

□ Always replace after removing

	Tighten the threaded connections in curb weight position. Refer to <u>⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11</u> .									
	130 Nm + 180°									
13 - V	3 - Wheel Bearing Housing									
	There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.									
14 - E	Expanding Rivet									
	Quantity: 2									
15 - Nut										
	Always replace after removing									
16 - E	Bolt									
	Always replace after removing									
	Tighten the threaded connections in curb weight position. Refer to ⇒ <u>B3.16 earing in Curb Weight Position</u> , <u>Lifting Vehicles with Coil Spring"</u> , <u>page 11</u> .									
	70 Nm + 180°									
17 - L	ower Transverse Link									
	The transverse link for a FWD vehicle is illustrated									
	Removing and Installing. Refer to <u>⇒ T4.4 ransverse Link, Removing and Installing", page 179</u> .									
18 - F	Pop Rivet Nuts									
19 - S	Stone Chip Protection									
	There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.									
20 - E	Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.									

Overview - Tie Rod 4.2

1 - Subframe

2 - Bolt

 Always replace after removing

3 - Wheel Bearing Housing

4 - Tie Rod

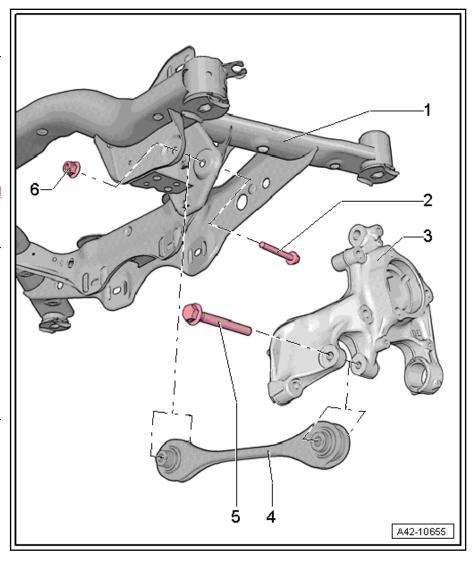
- ☐ The tie rod for an AWD vehicle is illustrated
- Removing and Installing. Refer to
 R4.5 od, Removing and Installing", page 182

5 - Bolt

- ☐ Always replace after removing
- □ Tighten the threaded connections in curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- □ 70 Nm + 180°

6 - Nut

- Always replace after removing
- ☐ 70 Nm + 180°



4.3 Upper Transverse Link, Removing and Installing

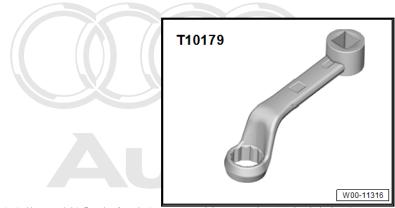
Special tools and workshop equipment required

◆ Torque Wrench, 40-200Nm -V.A.G 1332A-



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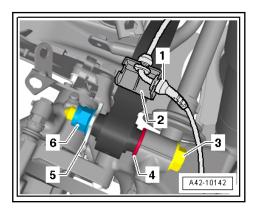
Insert Tool - 18mm -T10179-



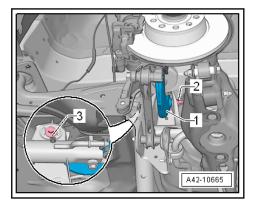
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Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to <u>⇒ B3.16 earing in Curb Weight Position, Lifting</u> Vehicles with Coil Spring", page 11.
- Remove the wheel. Refer to <u>⇒ a1 nd Tires</u>", page 255.
- AWD vehicles: disengage the wire -1- from the bracket -2and free it up.



- Remove the nut -6- and the washer -5-.
- Remove the bolt -3- and the washer -4-.
- Mark the position of eccentric screw -3- to the subframe using, for example, a felt-tip marker.



- Remove the nut -2- using Insert Tool 18mm -T10179- and remove the eccentric screw -3-.
- Remove the upper transverse link -1-.

Installing

Install in the reverse order of removal while noting the following:

- Pay attention to the mark made to the subframe for the eccentric bolt -3-.
- Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or <u>Axle Alignment, Evaluating</u>", page 257

Tightening Specifications

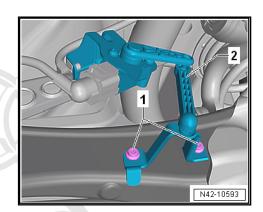
- ◆ Refer to ⇒ -4.1 Transverse Link", page 174
- ◆ Refer to ⇒ a1 nd Tires", page 255

4.4 Lower Transverse Link, Removing and Installing

Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- Remove the wheel. Refer to <u>⇒ a1 nd Tires</u>", page <u>255</u>.

Applies to vehicles with a level control system sensor



 Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.



Note

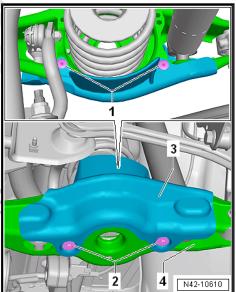
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The installation position illustrated is for a FWD vehicle.

Applies to vehicles with stone chip protection



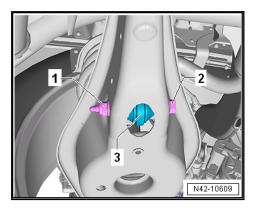
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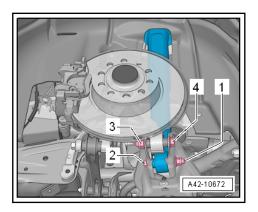
- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Applies to all

- Remove the coil spring. Refer to ⇒ R5.4 emoving and Installing", page 192.
- Remove the nut -1- and then the bolt -2- for the coupling rod -3-.



Remove the nut -1- and then the bolt -2- for the shock absorber threaded connection.



Remove the nut -3- and then the bolt -4- for the wheel bearing housing threaded connection.

Applies to vehicles with a gasoline engine:

Remove the muffler. Refer to ⇒ Rep. Gr. 26; Exhaust Pipes/ Mufflers: Overview - Muffler.

Applies to all



- A44-10277
- Mark the position of eccentric screw -B- to the subframe using, for example, a felt-tip marker.
- Remove the nut -A- and the eccentric screw -B-.
- perrRemove the lower Atransverse links not guarantee or accept any liability document. Copyright by AUDI AG.

Installing

Install in the reverse order of removal while noting the following:

- Note the applied marking of the eccentric screw -B- to the subframe.
- Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnos-
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems
- 14 Electronic Damping Control Module -J250
- 14 Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

Evaluate if an axle alignment is needed. Refer to <u>⇒ f2.2 or</u> Axle Alignment, Evaluating", page 257.

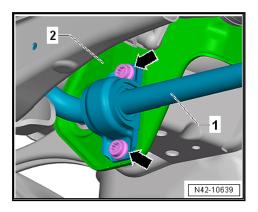
Tightening Specifications

- Refer to ⇒ -4.1 Transverse Link", page 174
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ Engine Mechanical; Rep. Gr. 26; Exhaust Pipes/ Mufflers; Overview - Muffler. pyright. Copying for private or commercial purposes, in part or in whole, is not
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4.5 Tie Rod, Removing and Installing

Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to <u>⇒ B3.16 earing in Curb Weight Position, Lifting</u> Vehicles with Coil Spring", page 11.
- Remove the applicable wheel. Refer to <u>⇒ a1 nd Tires</u>", page <u>255</u> .
- Remove the left and right stabilizer bar -1- bolts -arrows-.

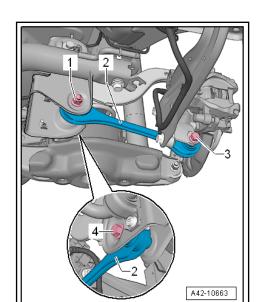




Note

Ignore -item 2-.

Loosen the nut -1- and the bolt -3- several turns.



- Remove the nut -1- and then remove the bolt -4- to the rear.
- Remove the bolt -3-.
- Remove the tie rod -2-.

Installing

Install in the reverse order of removal while noting the following:

- Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257

Tightening Specifications

- Refer to ⇒ -4.2 Tie Rod", page 176
- Refer to ⇒ -3.1 Stabilizer Bar", page 168
- Refer to <u>⇒ a1 nd Tires", page 255</u>



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5 Suspension Strut, Shock Absorber, **Spring**

- ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- ⇒ A5.2 bsorber, Removing and Installing", page 185
- ⇒ A5.3 bsorber, Servicing", page 188
- ⇒ R5.4 emoving and Installing", page 192

5.1 Overview - Suspension Strut, Shock Absorber, Spring

1 - Bolt

- □ Always replace after removing
- □ 50 Nm +45°

2 - Shock Absorber

- Removing and Installing. Refer to = A5.2 bsorber, Removing and Installing", page 185.
- □ Faulty shock absorbers must be vented and emptied before disposal. Refer to ⇒ G5.2 as-Filled Shock Absorbers, Venting and Draining", page 18

3 - Bolt

□ Always replace after removing

4 - Lower Transverse Link

5 - Clip

□ Serves as an assembly aid

6 - Coil Spring

□ Removing and Installing. Refer to ⇒ R5.4 emoving and Installing", page 192

7 - Upper Spring Support

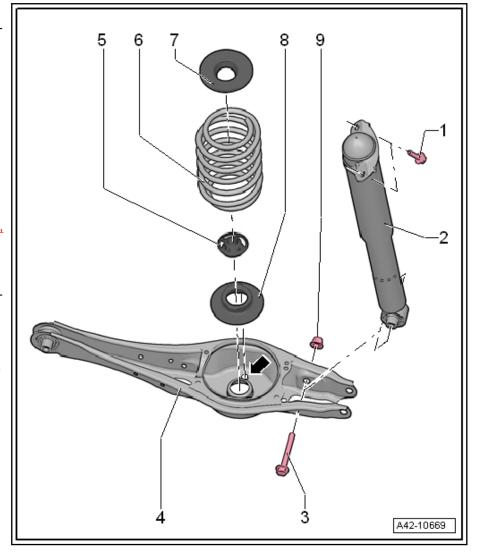
☐ Place on body "tab".

8 - Lower Spring Support

- Spring end rotated up to stop
- ☐ Insert the pin into the hole in the spring mount on the transverse link when installing -arrow-.

9 - Nut

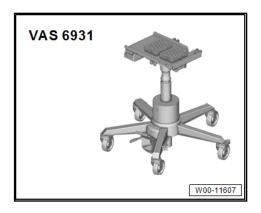
- □ Always replace after removing
- ☐ Tighten the threaded connection in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11
- □ 70 Nm +180°



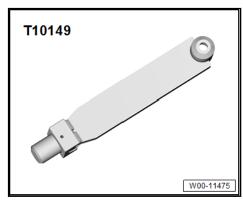
Shock Absorber, Removing and Instal-5.2

Special tools and workshop equipment required

♦ Engine and Gearbox Jack -VAS 6931-

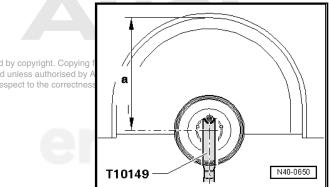


Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149-



Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- Remove the wheel. Refer to ⇒ a1 nd Tires", page 255.
- Secure the Engine and Gearbox Jack -VAS 6931- using the Engine/Gearbox Jack Adapter Wheel Hub Support T10149- with a wheel bolt on the wheel hub.



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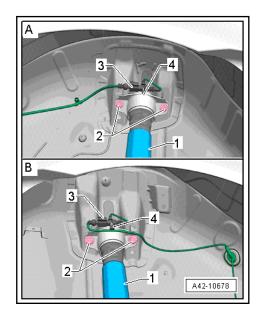


WARNING

- Do not lift or lower vehicle with the engine and gearbox jack still under the vehicle.
- Do not leave the Engine and Gearbox Jack -VAS 6931under the vehicle any longer than necessary.

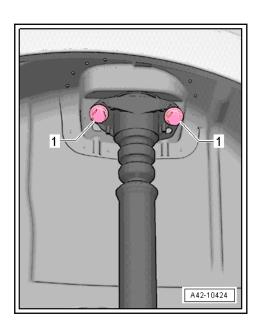
Applies to vehicles with electronic damping (Audi magnetic ride)

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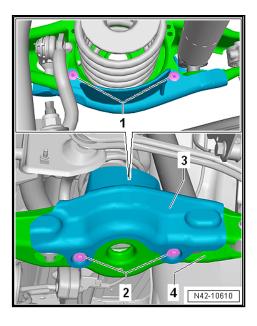
- Remove the wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Disconnect the connector -3-.
- -A- left shock absorber
- -B- right shock absorber
- Remove the connector housing from the bracket -4-.
- Remove the bolts -2-.

Applies to vehicles with standard shock absorbers



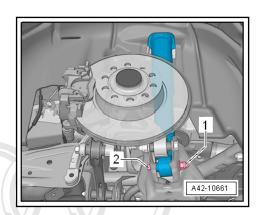
Remove the bolts -1-.

Applies to vehicles with stone chip protection



- If equipped, remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Applies to all



- Remove the nut -1- and the bolt -2-.
- Remove the shock absorber.

Installing

Install in the reverse order of removal while noting the following:

Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting

Tightening Specifications

Vehicles with Coil Spring", page 11

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- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ a1 nd Tires", page 255

5.3 Shock Absorber, Servicing

⇒ A5.3.1 bsorber, Servicing, Standard Shock Absorber", page 188

 \Rightarrow A5.3.2 bsorber, Servicing, Controlled Shock Absorber", page 190

Shock Absorber, Servicing, Standard Shock Absorber 5.3.1

1 - Shock Absorber

- □ Removing and Installing. Refer to ⇒ A5.2 bsorber, Removing and Installing", page 185
- □ Always vent and drain malfunctioning shock absorbers before disposal. Refer to \Rightarrow 5, page 16
- Shock Absorber, Checking. Refer to ⇒ 13 nformation", page 4.

2 - Protective Pipe

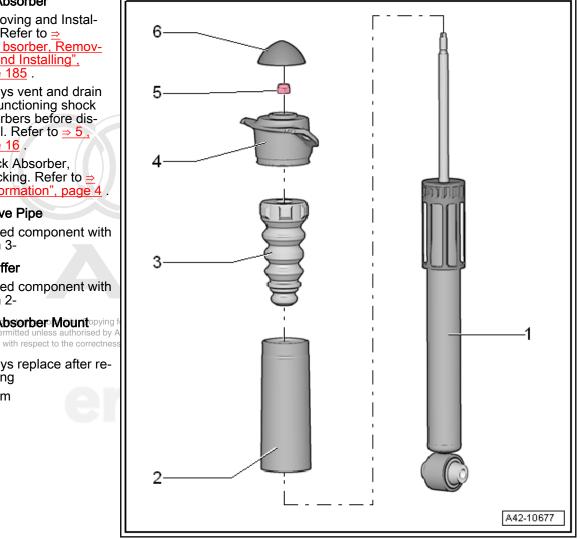
□ Shared component with -item 3-

3 - Stop Buffer

- □ Shared component with -item 2-
- 4 Shock Absorber Mount opying

5 - Nut

- □ Always replace after removing
- □ 25 Nm
- 6 Cover



Special tools and workshop equipment required

◆ Torque Wrench, 6-50Nm -VAG 1331A-

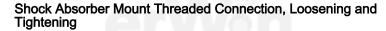


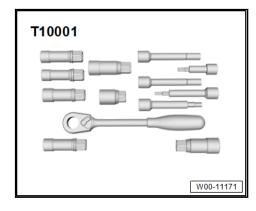
♦ Shock Absorber Set -T10001-

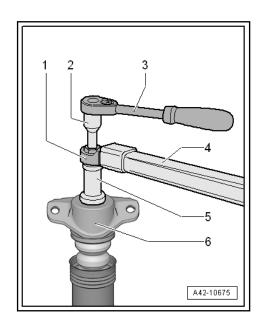


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 Commercially available ring socket wrench, such as »Hazet 6630c-21«







- 1 Commercially available ring socket wrench, such as »Hazet 6630c-21«
- 2 Extension with Counter Holder 2 -T10001/10-
- 3 Commercially Available Ratchet
- 4 Torque Wrench, 6-50Nm -VAG 1331A-
- 5 Shock Absorber Set Socket -T10001/1-
- 6 Shock Absorber Mount

Tightening specification. Refer to -Item 5- ⇒ Item 5 (page 188).

5.3.2 Shock Absorber, Servicing, Controlled Shock Absorber

1 - Shock Absorber

- □ Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- □ Removing and Instal-A5.2 bsorber, Removing and Installing", page 185
- □ Faulty shock absorbers must be vented and emptied before disposal. Refer to <u>⇒ 5, page</u> <u> 16</u> .
- ☐ Shock Absorber, Checking. Refer to ⇒ 13 nformation", page 4.

2 - Protective Pipe

□ Shared component with -item 3-

3 - Stop Buffer

□ Shared component with

4 - Shock Absorber Mount

5 - Not Installed

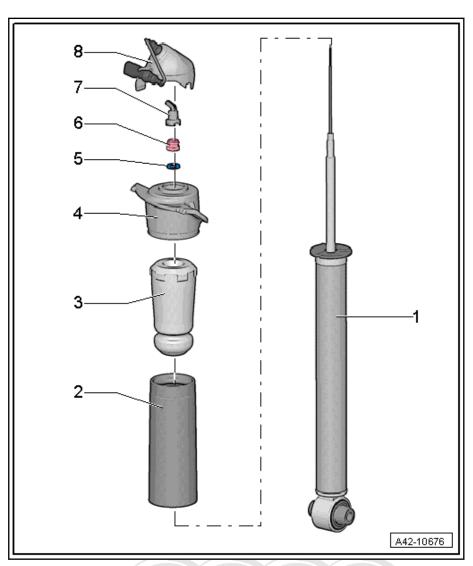
6 - Nut

- □ Always replace after removing
- □ 25 Nm

7 - Cable Guide

8 - Cover

■ With connector mount

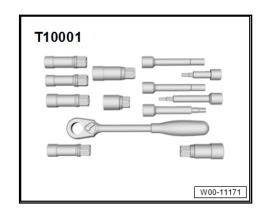


Special tools and workshop equipment required

◆ Torque Wrench, 6-50Nm -VAG 1331A-



♦ Shock Absorber Set -T10001-



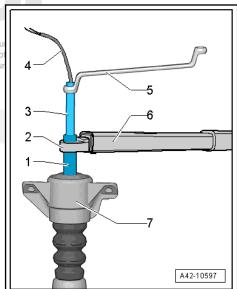
- 8 mm counterhold -T40279-
- Commercially available ring socket wrench, such as »Hazet 6630c-21«

Procedure

- · Shock absorber is removed.
- Free up the wire on the cover -ltem 8- ⇒ Item 8 (page 190).
- Unlock the contacts and remove the connector housing from the wire. Refer to ⇒ Electrical Equipment General Information; Rep. Gr. 97; Unlocking and Disassembling from Connector Housings.
- Remove the cable guide -Item 7- ⇒ Item 7 (page 190) from the nut -Item 6- ⇒ Item 6 (page 190).

Shock Absorber Mount Threaded Connection, Loosening and Tightening

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- 1 Shock Absorber Set Socket -T10001/1-
- 2 Commercially available ring socket wrench, such as »Hazet 6630c-21«
- 3 8 mm counterhold -T40279-
- 4 Cable
- 5 Commercially Available Wrench
- 6 Torque Wrench, 6-50Nm -VAG 1331A-

Shock Absorber Mount

Tightening specification. Refer to -Item 6- ⇒ Item 6 (page 190)

5.4 Spring, Removing and Installing

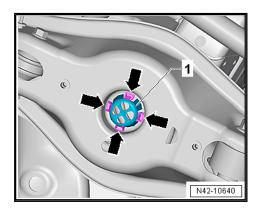
Special tools and workshop equipment required

♦ Spring Compressor Kit -V.A.G 1752-

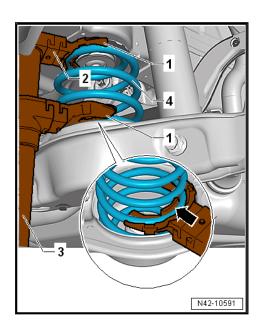
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Removing



- Remove the wheel. Refer to \Rightarrow a1 nd Tires", page 255.
- Press the tabs -arrows- on the assembly aid -1- inward.
- Remove the assembly aid -1- upward.
- Insert the spring tensioner -3-.



- Spring Compressor Kit Spring Retainer with Inserts -V.A.G 1752/3A-
- 2 Spring Compressor Kit Adapter Blocks -V.A.G 1752/9-
- 3 Spring Compressor Kit Spring Tensioner -V.A.G 1752/1-
- 4 Spring



WARNING

Make sure the coil spring is seated correctly in the Spring Compressor Kit - Spring Retainer with Inserts -V.A.G 1752/3A--arrow- (danger of accident).

- Compress the coil spring until it can be removed.



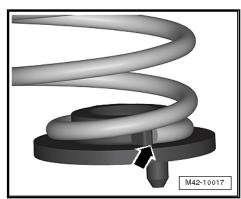
Note

Use a wrench or a reversible ratchet to tighten the spring compressor.

- Remove the spring.

Installing





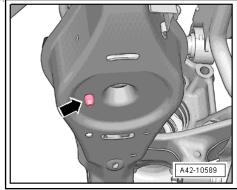
Install in the reverse order of removal while noting the following:

The spring start -arrow- must touch the stop of lower spring support.

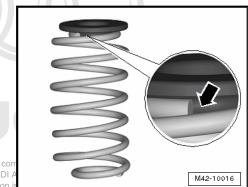
- Insert the spring together with the spring support.
- The lower protected by convigable Capacing for private or commercial purposes, in part or in whole, is not
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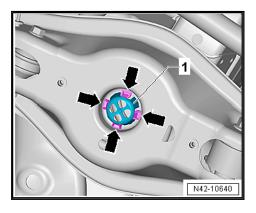


- Insert this pin into hole of lower control arm -arrow-.
- Insert the top of the spring support into the upper spring end.



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- The bead on the spring support -arrow- must fit into the coil spring correctly.
- Release the tension on the spring, guiding upper spring support onto tab of body.
- Remove the spring compressor.
- Insert the assembly aid -1- and press downward until the tabs -arrows- engage.



 Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

Tightening Specifications

◆ Refer to <u>⇒ a1 nd Tires</u>", page 255

6 Wheel Bearing and Trailing Arm

- ⇒ -6.1 Wheel Bearing", page 195
- ⇒ -6.2 Trailing Arm", page 199
- ⇒ B6.3 earing Housing, Removing and Installing", page 201
- ⇒ B6.4 earing Unit, Removing and Installing", page 211
- ⇒ B6.5 earing Housing Bonded Rubber Bushing, Replacing", page 217
- ⇒ A6.6 rm with Mounting Bracket, Removing and Installing", page 222
- ⇒ A6.7 rm, Servicing", page 226
- 6.1 Overview Wheel Bearing
- ⇒ -6.1.1 Wheel Bearing Housing and Wheel Bearing Unit, FWD Vehicles", page 195
- ⇒ -6.1.2 Wheel Bearing Housing and Wheel Bearing Unit, AWD Vehicles", page 197
- 6.1.1 Overview Wheel Bearing Housing and Wheel Bearing Unit, FWD Vehicles



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1 - Bolt

Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Overview -Rear Axle Speed Sen-

2 - Rear Speed Sensor

Removing and instal. ling Refer to Brake System; Rep. Gr. 45; Sensors; Right/Left Rear ABS Wheel Speed Sensor Right Rear ABS Wheel Speed Sensor -G44-/ Left Rear ABS Wheel Speed Sensor -G46-. Removing and Installing.

3 - Wheel Bearing Housing

□ Removing and Instal-B6.3.1 earing Housing, Removing and Installing, FWD Vehicles", page 201.

4 - Bonded Rubber Bushing

□ Replacing. Refer to ⇒ B6.5 earing Housing Bonded Rubber Bushing, Replacing", page <u>217</u> .

5 - Bolt

☐ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

6 - Brake Rotor

□ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing.

7 - Bolt

☐ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

8 - Dust Cap

- □ Always replace after removing
- □ Removing and Installing. Refer to ⇒ B6.4.1 earing Unit, Removing and Installing, FWD Vehicles", page
- ☐ A perfect seal is only achieved using a new dust cap.

9 - Bolt

- Always replace after removing
- Clean the threads in the wheel bearing housing with a thread tap before installing.
- □ Bolt, Loosening and Tightening. Refer to ⇒ A7.2 xle Threaded Connection, Loosening and Tightening", page 233
- ☐ 200 Nm + 180° additional turn

10 - Wheel Bearing Unit

Removing and Installing.	Refer to ⇒	B6.4.1	earing U	nit, I	Removing	and	Installing,	FWD	Vehicles",	pag	ge
211.					· ·						

- ☐ The wheel bearing and wheel hub are installed together in one housing.
- The wheel bearing unit cannot be serviced and has zero play. Adjusting as well as repair work is not possible!

Caution When setting down/storing, avoid contaminating with dirt and damaging the seal. Refer to ⇒ <u>page 214</u> .

11 - Brake Shield

□ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Shield, Removing and Installing.

Overview - Wheel Bearing Housing and Wheel Bearing Unit, AWD Vehi-6.1.2 cles

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1 - Bolt

- Always replace after re-moving
- □ 80 Nm + 90°

2 - Drive Axle

3 - Wheel Bearing Housing

Removing and Installing. Refer to ⇒ B6.3.2 earing Housing, Removing and Installing, AWD Vehicles", page 206.

4 - Rear Speed Sensor

Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Right/Left Rear ABS Wheel Speed Sensor Right Rear ABS Wheel Speed Sensor -G44-/ Left Rear ABS Wheel Speed Sensor -G46-, Removing and Instal-

5 - Bolt

Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Overview -Rear Axle Speed Sen-

6 - Bonded Rubber Bushing

B6.5 earing Housing Bonded Rubber Bushing, Replacing", page 217.

□ Replacing. Refer to ⇒

7 - Bolt

☐ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

8 - Brake Rotor

□ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing. permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

9 - Bolt

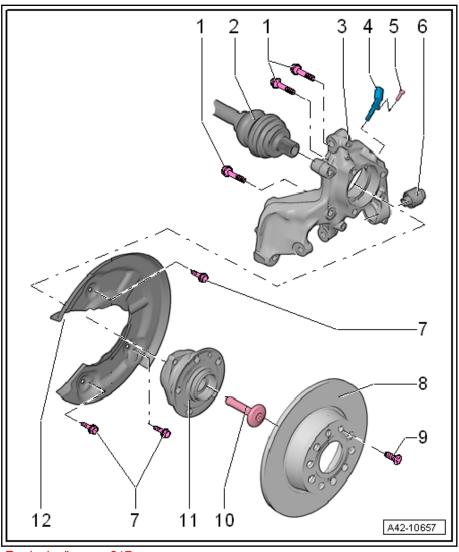
☐ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

10 - Bolt

- Always replace after removing
- Clean the threads in the CV joint with a thread tap before installing.
- □ Bolt, Loosening and Tightening. Refer to ⇒ A7.2 xle Threaded Connection, Loosening and Tightening", page 233
- ☐ Bolt -WHT.005.437- / black = 200 Nm +180° additional turn
- ☐ Bolt -WHT.005.437.A- / silver = 200 Nm + 90° additional turn

11 - Wheel Bearing Unit

- □ Removing and Installing. Refer to ⇒ B6.4.2 earing Unit, Removing and Installing, AWD Vehicles", page
- ☐ The wheel bearing and wheel hub are installed together in one housing.



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☐ The wheel bearing unit cannot be serviced and has zero play. Adjusting as well as repair work is not possible!



12 - Brake Shield

□ Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Shield, Removing and Installing.

6.2 Overview - Trailing Arm



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1 - Cover

2 - Mounting Bracket

3 - Bolt

- ☐ Always replace after removing
- □ 50 Nm +45°

4 - Bolt

- ☐ Always replace after removing
- □ 90 Nm + 90°

5 - Bolt

- ☐ Always replace after removing
- □ 70 Nm +90°

6 - Bolt

- ☐ Always replace after removing
- □ 70 Nm +90°

7 - Bolt

□ Tightening specification. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Overview -Rear Axle Speed Sensor.

8 - Rear Speed Sensor

Removing and installing. Refer to ⇒ Brake System; Rep. Gr. 45; Sensors; Right/Left Rear ABS Wheel Speed Sensor Right

Rear ABS Wheel Speed Sensor -G44-/Left Rear ABS Wheel Speed Sensor -G46-, Removing and Installing.



□ For FWD vehicles

10 - Wheel Bearing Housing

☐ For AWD vehicles

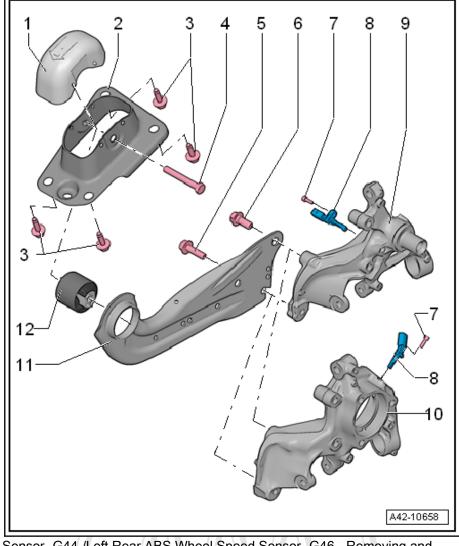
11 - Trailing Arm

□ Removing and Installing. Refer to ⇒ A6.6 rm with Mounting Bracket, Removing and Installing", page 222.

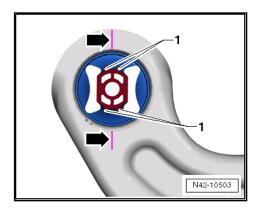
12 - Bonded Rubber Bushing

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- □ Note the installation position. Refer to ⇒ page 201.
- □ Replacing. Refer to ⇒ A6.7 rm, Servicing", page 226.



Bonded rubber bushing installation position:



Position the bonded rubber bushing on the trailing arm so that the marked line -arrows- is between the raised sections -1-.



Note

Make absolutely sure that the bonded rubber bushing is in the correct installation position in relation to the trailing arm socket.

Wheel Bearing Housing, Removing 6.3 and Installing

⇒ B6.3.1 earing Housing, Removing and Installing, FWD Vehicles", page 201

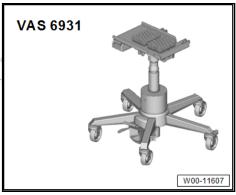
⇒ B6.3.2 earing Housing, Removing and Installing, AWD Vehicles", page 206

6.3.1 Wheel Bearing Housing, Removing and Installing, FWD Vehicles

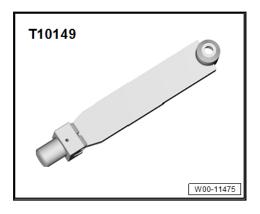
Special tools and workshop equipment required

◆ Engine and Gearbox Jack -VAS 6931-

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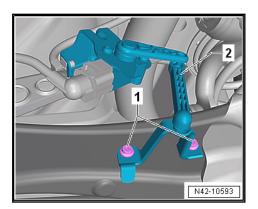
Engine/Gearbox Jack Adapter - Wheel Hub Support -T1Ŏ149-



Removing

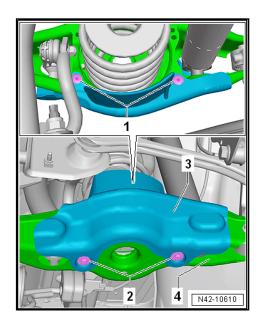
- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to <u>⇒ B3.16 earing in Curb Weight Position, Lifting</u> Vehicles with Coil Spring", page 11.
- Remove the wheel. Refer to <u>⇒ a1 nd Tires</u>", page 255.
- Remove the brake caliper. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Caliper, Removing and Installing.
- If the wheel bearing housing is being replaced and the old wheel bearing unit reinstalled, the wheel bearing unit must be removed.
- If necessary intermove the wheel bearing junito Relegion part or in whole, is not B6.4.1 earing Unit; Removing and Installing FWD Vehicles y AUDI AG.
- Remove the brake shield, if necessary. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

Applies to vehicles with a level control system sensor



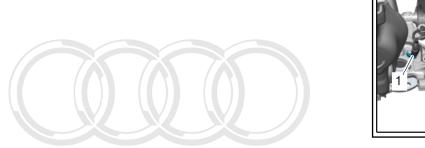
Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

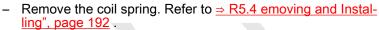
Applies to vehicles with stone chip protection



- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Applies to all



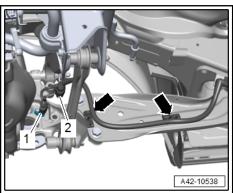


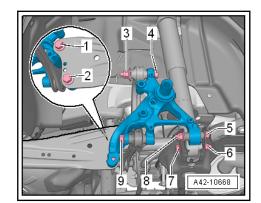
- Disconnect the connector -1- from the ABS speed sensor.
- Disconnect the connector -2- on the electromechanical parking brake motor from the brake caliper.

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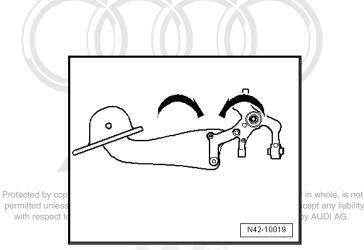
Remove the bolts -1 and 2-.





- Remove the nuts -3, 6 and 8- and bolts -4, 5, 7 and 9-.
- Remove the wheel bearing housing.

Installing

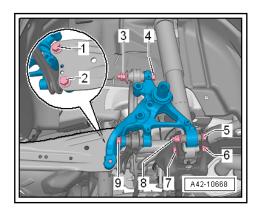


permitted unles

Install in the reverse order of removal while noting the following:

Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and shock absorber always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

Always perform the following steps in the sequence given!



- Install the wheel bearing housing.
- Insert the bolts -4, 5 and 7- and tighten the nuts -3, 6 and 8hand-tight.
- Tighten the bolt -9- by hand.
- Tighten the bolts -1 and 2- by hand.

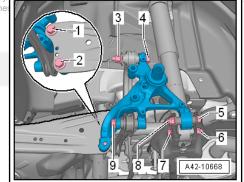


Caution

Installing under stress causes premature wear of bonded rubber bushings.

- ♦ Before they are tightened, axle components with bonded rubber bushings must be brought into the position they will be in when driving (curb weight position). Refer to *⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles* with Coil Spring", page 11 .
- Tighten the bolts and nuts -3 through 9-.

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- Remove the Engine and Gearbox Jack -VAS 6931- with the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- from the wheel hub.
- Install the coil spring. Refer to ⇒ R5.4 emoving and Installing", page 192
- Tighten the bolts -1 and 2-.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems.
- 14 Electronic Damping Control Module -J250
- 14 Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257

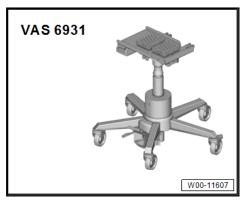
Tightening Specifications

- Refer to ⇒ -6.1.1 Wheel Bearing Housing and Wheel Bearing Unit, FWD Vehicles", page 195
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ -6.2 Trailing Arm", page 199
- Refer to ⇒ -4.2 Tie Rod", page 176
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- Refer to ⇒ a1 nd Tires", page 255

6.3.2 Wheel Bearing Housing, Removing and Installing, AWD Vehicles

Special tools and workshop equipment required

Engine and Gearbox Jack -VAS 6931-

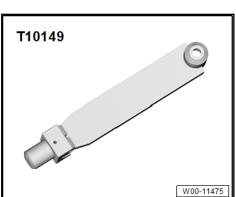


Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149-

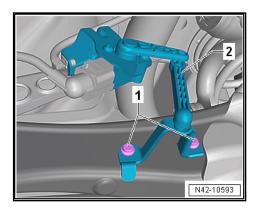


Removing

- Before starting the procedure, measure the distance from not be center of the wheel to the lower edge of the wheel hous. ing Refer to <u>-B3:46 earing in Ourb Weight Position Ulifting</u> Vehicles with Coil Spring", page 11.
- Loosen the outer drive axle threaded connection. Refer to ≥ A7.2 xle Threaded Connection, Loosening and Tightening", page 233
- Remove the wheel. Refer to ⇒ a1 nd Tires", page 255.



Applies to vehicles with a level control system sensor



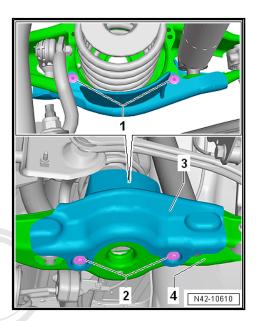
Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.



Note

The installation position illustrated is for a FWD vehicle.

Applies to vehicles with stone chip protection

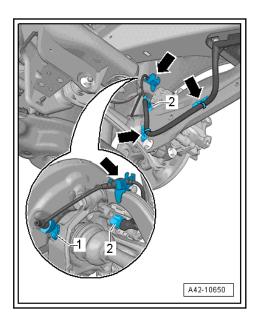


- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

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Applies to all



- Remove the coil spring. Refer to ⇒ R5.4 emoving and Installing", page 192
- Disconnect and free up the connector -1- from the ABS speed sensor.
- Disconnect the connector -2- on the electromechanical parking brake motor from the brake caliper and free it up.

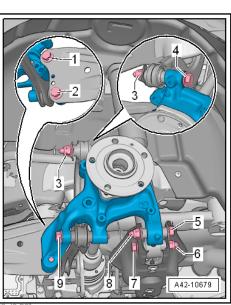


Note

Ignore the -arrows-.

- Remove the brake shield. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Shield, Removing and Installing.
- Remove the bolts -1 and 2-.

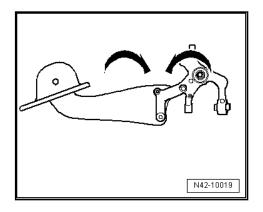




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- Remove the multisgram of and rectand holds and holds and policy an
- Remove the wheel bearing housing.

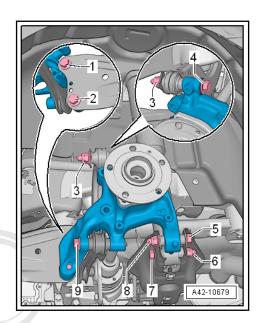
Installing



Install in the reverse order of removal while noting the following:

Threaded connection of trailing link/wheel bearing housing must only be tightened when all other components (spring and shock absorber always) of the respective wheel suspension have been already assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

Always perform the following steps in the sequence given!



- Install the wheel bearing housing.
- Insert the bolts -4, 5 and 7- and tighten the nuts -3, 6 and 8hand-tight.
- Tighten the bolt -9- by hand.
- Tighten the bolts -1 and 2- by hand.

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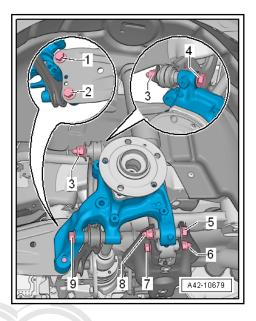




Caution

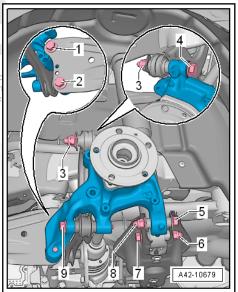
Installing under stress causes premature wear of bonded rubber bushings.

- ♦ Before they are tightened, axle components with bonded rubber bushings must be brought into the position they will be in when driving (curb weight position). Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11
- Tighten the bolts and nuts -3 through 9-.



- Remove the Engine and Gearbox Jack -VAS 6931- with the Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- from the wheel hub.
- Install the coil spring. Refer to ⇒ R5.4 emoving and Installing", page 192
- Tighten the bolts -1 and 2-.

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Install in reverse order of removal. Note the following:

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems
- 14 Electronic Damping Control Module -J250
- 14 Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera Protection of the Protection o permetaturges actinificating ALDI AS AUD 775 does not guarantee or accept any ilai with respect to the concentees of information in this document. Copyright by AUDI AG.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

Tightening Specifications

- Refer to ⇒ -6.1.2 Wheel Bearing Housing and Wheel Bear-<u>ing Unit, AWD Vehicles", page 197</u>
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ -6.2 Trailing Arm", page 199
- Refer to ⇒ -4.2 Tie Rod", page 176
- Refer to ⇒ A7.2 xle Threaded Connection, Loosening and Tightening", page 233
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", <u>page 184</u>
- Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- ♦ Refer to ⇒ a1 nd Tires", page 255

6.4 Wheel Bearing Unit, Removing and Installing

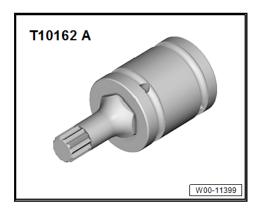
- ⇒ B6.4.1 earing Unit, Removing and Installing, FWD Vehicles", page 211
- ⇒ B6.4.2 earing Unit, Removing and Installing, AWD Vehicles", page 215

Wheel Bearing Unit, Removing and Installing, FWD Vehicles 6.4.1

Audi TT 2015 ➤

Special tools and workshop equipment required 3241/4 VW 637/2 V.A.G 1332 V.A.G 1410 eregre Protected by copyright. Copyright. permitted unless authorised with respect to the correctr W42-0044

- Puller Grease Cap -VW 637/2-
- Camshaft Installer Kit Sleeve -3241/4-
- Torque Wrench, 40-200Nm -V.A.G 1332A-
- Torque Wrench -V.A.G 1410-
- Socket Xzn 18mm -T10162A-



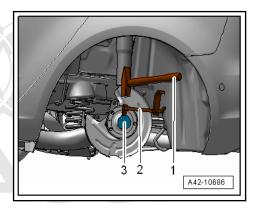


WARNING

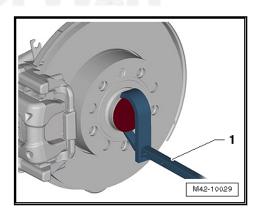
There is a risk of breaking the Socket - Xzn 18 -T10162-without the "A" index.

♦ Socket - Xzn 18mm -T10162A- must be used exclusive-

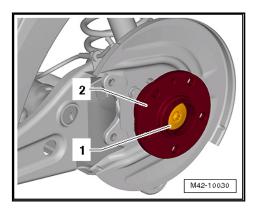
Removing



- Remove the brake rotor. Refer to \Rightarrow Brake System: Rep copyright. Copying for private or commercial purposes, in part or in whole, is not Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing authorised by AUDI AG. AUDI AG does not guarantee or accept any liability the correctness of information in this document. Copyright by AUDI AG.
- Loosen the dust cap -3- from the seat by tapping lightly on the claw of the Puller - Grease Cap -VW 637/2- -2- with the hammer -1-.
- Press the dust cap off using the Puller Grease Cap -VW 637/2- -item 1-.



- Remove the bolt -1- with the Socket - Xzn 18mm -T10162A-.





Caution

Never use an impact wrench when loosening the bolt -1using the Socket - Xzn 18mm -T10162 A-.

Remove the wheel bearing unit -2- from the axle stub.





Caution

There is a risk of contaminating and damaging the seal.

- The wheel bearing -1- must always face up in order to remove the wheel bearing unit.
- Always set the wheel bearing unit down on the wheel ing for I uthorised by AUD hub -2-. with respect to the correctness of

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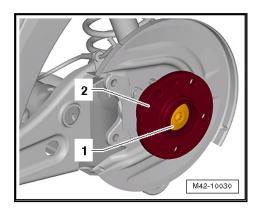
Installing

Install in the reverse order of removal while noting the following:

Carefully slide the wheel hub/wheel bearing unit onto the axle stub.

Make sure that wheel hubs/wheel bearing unit does not tilt!

Tighten using a new internal multi-point bolt -1-.





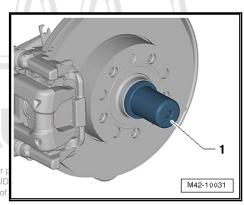
Caution

Never use an impact wrench when tightening the bolt -1using the Socket - Xzn 18mm -T10162 A-.



Note

- First tighten the bolt to the given tightening specification using the torque wrench.
- Use a rigid wrench to apply additional torque angle.
- Install the new dust cap with the Sleeve -3241/4- -1-



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Note

- Always replace dust caps.
- Damaged dust caps allow moisture to enter. Therefore, always use the tool shown.

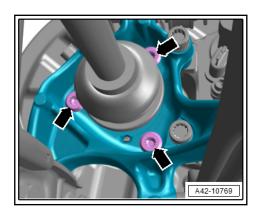
Tightening Specifications

- Refer to ⇒ -6.1.1 Wheel Bearing Housing and Wheel Bearing Unit, FWD Vehicles", page 195
- Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.

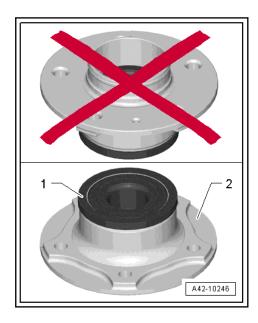
6.4.2 Wheel Bearing Unit, Removing and Installing, AWD Vehicles

Removing

- Loosen the outer drive axle threaded connection. Refer to ⇒ A7.2 xle Threaded Connection, Loosening and Tightening", page 233.
- Remove the brake rotor. Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Brake Rotor, Removing and Installing.
- Remove the bolts -arrows-.



Remove the wheel bearing unit from the wheel bearing housing and from the drive axle.





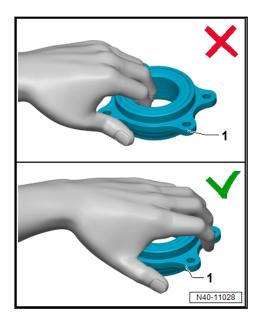
Caution

There is a risk of contaminating and damaging the seal.

- The wheel bearing -1- must always face up in order to remove the wheel bearing unit.
- Always set the wheel bearing unit down on the wheel hub -2-.
- Never reach inside when lifting the wheel bearing.

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· Hold the wheel bearing only on the outside.

The same procedure also applies to the wheel bearing without a wheel hub.

Installing

Install in reverse order of removal.

Tightening Specifications

- Refer to ⇒ -6.1.2 Wheel Bearing Housing and Wheel Bearing Unit, AWD Vehicles", page 197
- Refer to ⇒ Brake System; Rep. Gr. 46; Rear Brakes; Overview - Rear Brakes.
- Refer to ⇒ A7.2 xle Threaded Connection, Loosening and Tightening", page 233

6.5 Wheel Bearing Housing Bonded Rubber Bushing, Replacing

Special tools and workshop equipment required

◆ Subframe Bushing Tool Kit -3301-

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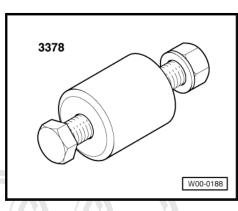
Bearing Installer - Control Arm -3346-



Bearing Installer - Carrier Bearing -3350-



Fitting Sleeve -3378-



Torque Adapter -3390-

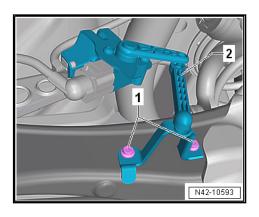


Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to \Rightarrow B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- Remove the wheel. Refer to ⇒ a1 nd Tires", page 255.

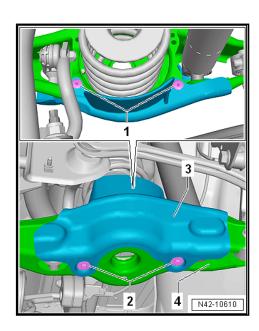
Remove the coil spring. Refer to ⇒ R5.4 emoving and Installing", page 192

Applies to vehicles with a level control system sensor



Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

Applies to vehicles with stone chip protection



- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

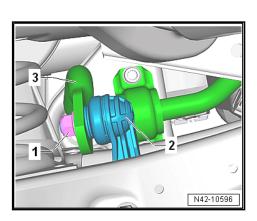
Applies to all



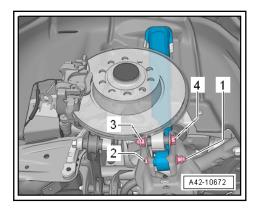
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- Remove the nut -1-.
- Remove the coupling rod -2- from the stabilizer bar -3-.

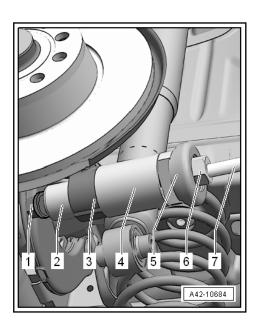


Remove the nut -1- and then the bolt -2- for the shock absorber threaded connection.



Remove the nut -3- and then the bolt -4- for the wheel bearing housing threaded connection.

Pressing out the bonded rubber bushing



- Bearing Installer Control Arm Nut -3346/3-1 -
- 2 -Torque Adapter -3390-
- 3 -Wheel Bearing Housing
- 4 -Bearing Installer - Carrier Bearing -3350-
- 5 -Thrust Piece from the Subframe Bushing Tool Kit -3301-
- Bearing Installer Control Arm Nut -3346/3-
- Bearing Installer Control Arm Spindle -3346/2-
- Remove the bonded rubber bushing by turning the Bearing Installer - Control Arm - Nut -3346/3- -item 6-. If necessary, counterhold on the Bearing Installer - Component -3346/2--item 7-.

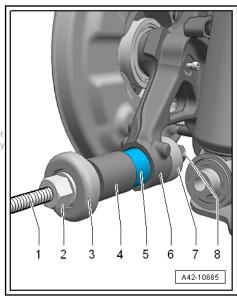
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Bonded Rubber Bushing, Installing

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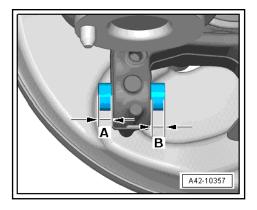


- Bearing Installer Control Arm Spindle -3346/2-
- 2 -Bearing Installer - Control Arm - Nut -3346/3-
- 3 -Thrust Piece from the Subframe Bushing Tool Kit -3301-
- 4 -Fitting Sleeve -3378-
- 5 -**Bonded Rubber Bushing**
- 6 -Wheel Bearing Housing
- 7 -Bearing Installer - Control Arm -3346-
- Bearing Installer Control Arm Nut -3346/3-
- Install the bonded rubber bushing by turning the Bearing Installer Control Arm Nut -3346/3- -2-. If necessary, counterhold on the Bearing Installer - Component -3346/2- -1-.



Note

- Do not use lubricant!
- Insert the bearing with care so it is not tilted.
- Check the installed position after installing the bonded rubber bushing.



Dimensions -A- and -B- must be identical.

Install the bonded rubber bushing again if dimensions -Aand -B- are different.

Installing

Install in the reverse order of removal while noting the following:

Tighten the threaded connections in the curb weight position. Refer to ⇒ B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems
- 14 Electronic Damping Control Module -J250
- Electronic Damping Control Module, functions
- 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to > Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.
- Evaluate if an axle alignment is needed. Refer to ⇒ f2.2 or Axle Alignment, Evaluating", page 257.

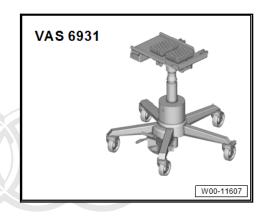
Tightening Specifications

- Refer to ⇒ -6.1 Wheel Bearing", page 195
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184 ted by copyright. Copying for private or commercial purposes, in part or in whole, is not
- permitted unless authorised by AUDI, AG. AUDI AG does not guarantee or accept any liability Refer to the same of t
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ a1 nd Tires", page 255

6.6 Trailing Arm with Mounting Bracket, Removing and Installing

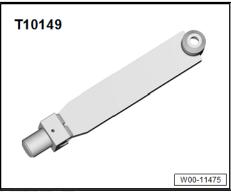
Special tools and workshop equipment required

Engine and Gearbox Jack -VAS 6931-

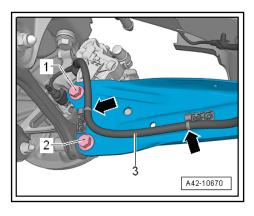


Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149-

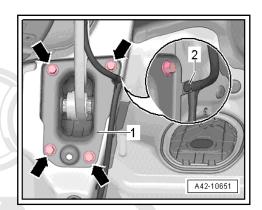




Removing



- Remove the wheel. Refer to ⇒ a1 nd Tires", page 255.
- Remove the coil spring. Refer to <u>⇒ R5.4 emoving and Instal-</u> ling", page 192
- Remove the brackets -arrows- by pressing out the rivet inner pins.
- Free up the wiring harness -3-.
- Remove the bolts -1 and 2- from the trailing arm.
- Remove the applicable underbody trim panel. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- Remove the wire -2- from the mounting bracket -1-.

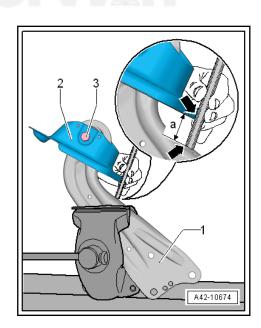


- Mark the mounting bracket -1- installation position on the body.
- Remove the bolts -arrows-.
- Remove the trailing arm with mounting bracket.

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- If the mounting bracket is separated from the trailing arm for the following steps, the installation position of the mounting bracket to the trailing arm must then be adjusted.
- Clamp the trailing arm in the vise with protective covers.

Mounting Bracket Installation Position to Trailing Arm, Adjusting



Dimension -a- is 37 mm (1.46 in.).

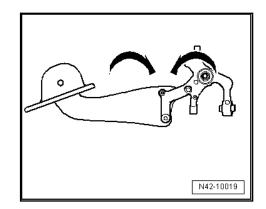
- 1 Trailing Arm
- 2 Mounting Bracket
- Place a steel ruler on the mounting bracket as shown and adjust to the dimension given above. Make sure that the steel ruler is resting completely on the mounting bracket and is positioned at the inner edge of the trailing arm.
- When dimension -a- has been adjusted, tighten the bolt -3-.

Installing

Install in the reverse order of removal while noting the following:

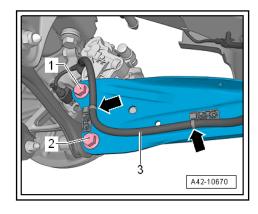
Position: trailing arm/wheel bearing housing threaded connection





The trailing arm/wheel bearing housing threaded connection must only be tightened when all other components (especially the spring and strut) of the respective wheel suspension have already been assembled. To tighten, suspension must be unloaded. Only now do the trailing arm and wheel bearing housing move into the position required -arrows-.

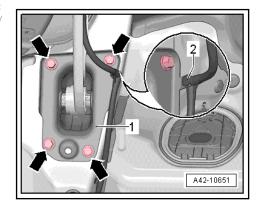
Always perform the following steps in the sequence given!



- Install the trailing arm and mounting bracket with bolts -1 and 2- on the wheel bearing housing but do not tighten yet.
- Raise the suspension using Engine and Gearbox Jack -VAS 6931- and Engine/Gearbox Jack Adapter - Wheel Hub Support -T10149- until the mounting bracket contacts the body.
- Tighten the bolts -arrows- onto the old impression or the marking applied previously.

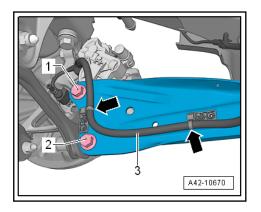
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- Secure the line -2- to the mounting bracket -1-.
- Lower the suspension again using Engine and Gearbox Jack -VAS 6931- and remove the Engine/Gearbox Jack Adapter -Wheel Hub Support -T10149- from the wheel hub.

- Install the coil spring. Refer to ⇒ R5.4 emoving and Instal-<u>ling", page 192</u>
- Tighten the bolts -arrows- for trailing arm to tightening specification, while observing the required position of components. Refer to ⇒ Fig. ""Position: trailing arm/wheel bearing housing threaded connection"", page 224.



- Install the bracket by pressing in the rivet inner pins -arrows-.
- Evaluate if an axle alignment is needed. Refer to <u>⇒ f2.2 or</u> Axle Alignment, Evaluating", page 257

Tightening Specifications

- Refer to ⇒ -6.2 Trailing Arm", page 199
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.
- Refer to <u>⇒ a1 nd Tires</u>", page 255

6.7 Trailing Arm, Servicing

Special tools and workshop equipment required

♦ Press Plate -VW 402-

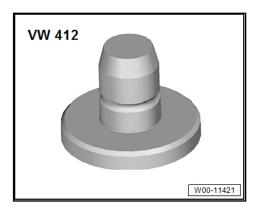


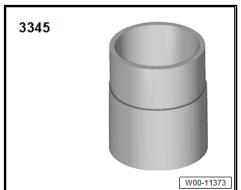
♦ Press Piece - Multiple Use -VW 412-



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Bearing Installer - Wheel Bearing -3345-

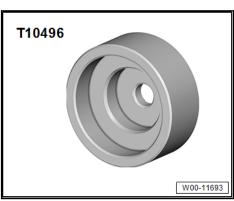




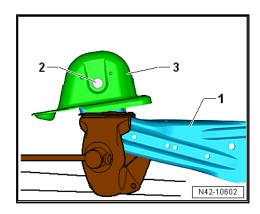
♦ Bearing Installer - Control Arm -3346-



♦ Press Piece - Trailing Arm Bushing -T10496-



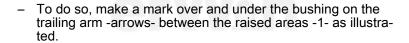
Procedure

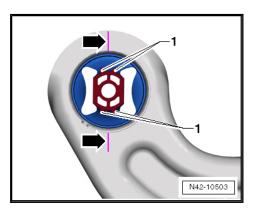


- Remove the trailing arm with the mounting bracket. Refer to \Rightarrow A6.6 rm with Mounting Bracket, Removing and Installing", page 222 .
- Clamp the trailing arm -1- in the vise with protective covers.
- Remove the bolt -2- and remove the mounting bracket -3from the trailing arm.
- Mark the installation position of the bonded rubber bushing on the trailing arm.



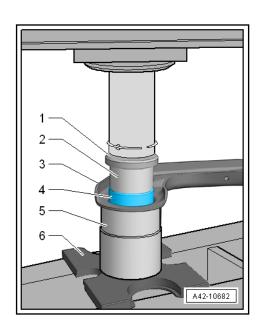
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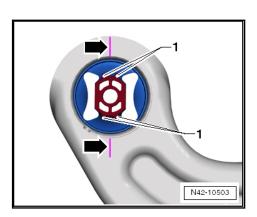
Bonded Rubber Bushing, Pressing Out





- Mount the tools as shown.
- Press Piece Multiple Use -VW 412-
- Pipe -3346/1- from the Bearing Installer Control Arm -3346-
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- 4 -**Bonded Rubber Bushing**
- Bearing Installer Wheel Bearing -3345-5 -
- Press Plate -VW 401-
- Press out the bonded rubber bushing.

Bonded Rubber Bushing, Pressing In



Position the bonded rubber bushing on the trailing arm so that the marked line -arrows- is between the raised sections

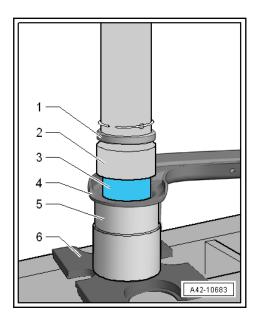


Note

Make absolutely sure that the bonded rubber bushing is in the correct installation position in relation to the trailing arm socket.

Mount the tools as shown.





- Press Piece Multiple Use -VW 412-
- 2 -Press Piece - Trailing Arm Bushing -T10496-
- 3 -**Bonded Rubber Bushing**
- 4 -Trailing Arm
- Bearing Installer Wheel Bearing -3345-
- Press Plate -VW 402-
- Install the bonded rubber bushing.
- Attach the trailing arm to the mounting bracket. Refer to ≥ page 224
- Install the trailing arm with the mounting bracket. Refer to ⇒ A6.6 rm with Mounting Bracket, Removing and Installing", page 222.

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7 **Drive Axle**

- ⇒ -7.1 Drive Axle", page 231
- \Rightarrow A7.2 xle Threaded Connection, Loosening and Tightening", page 233
- ⇒ A7.3 xle, Removing and Installing", page 235
- ⇒ A7.4 xle, Disassembling and Assembling", page 237
- ⇒ C7.5 V Joint, Checking", page 242
- ⇒ C7.6 V Joint, Checking", page 244

7.1 Overview - Drive Axle

Lubricating grease. Refer to the ⇒ Electronic Parts Catalog (ETKA).	Outer joint diame- ter	Inner joint diame- ter
	82 mm (3.23 in.)	100 mm (3.94 in.)
Total quantity	45 g (1.6 oz)	110 g (3.9 oz)



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1 - Outer CV Joint

- Only replace complete-
- □ Removing. Refer to ⇒ Fig. ""Outer CV joint, pressing off"", page 239 .
- ☐ Installing: Using a plastic hammer, drive onto the shaft as far as the
- ☐ Divide the grease evenly in the joint
- ☐ Check using the Vehicle Diagnostic Tester. Refer to ⇒ C7.5 V Joint, Checking", page 242.

2 - Bolt

- □ Always replace after removing
- □ Before installing, clean the threads in the CV joint with a thread tap.
- Bolt, Loosening and Tightening. Refer to ⇒ A7.2 xle Threaded Connection, Loosening and Tightening", page
- □ Bolt -WHT.005.437- / black = 200 Nm +180° additional turn
- ☐ Bolt -WHT.005.437.A- / $silver = 200 Nm + 90^{\circ}$ additional turn

10 12 16 15 N42-10333

3 - Drive Axle

□ Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).

4 - Clamp

- □ Always replace after removing
- ☐ Tensioning. Refer to ⇒ Fig. ""Tension the clamp on the small diameter"", page 242.

5 - CV Boot

- Check for tears and scuffing
- Material: Hytrel polyelastomer

6 - Clamp

- Always replace after removing
- ☐ Tensioning. Refer to ⇒ Fig. ""Tightening clamp on the outer joint"", page 241.

7 - Plate Spring

- With inner spline
- □ Installation position. Refer to ⇒ Fig. ""Plate spring installation position on the inner and outer joint"", page 240

8 - Circlip

- □ Always replace after removing
- □ Insert in shaft groove

9 - CV Joint CV Boot

■ Material: Hytrel polyelastomer

	Without vent hole
	Check for tears and scuffing
	Drive off CV joint using a drift
	Coat the sealing surface with -D 454 300 A2- before installing it on the CV joint
10 - 0	Clamp
	Always replace after removing
	Tensioning. Refer to ⇒ Fig. ""Tension the clamp on the small diameter"", page 242.
11 - E	Backing Plate
12 - I	nternal Multi-Point Bolt
	Always replace after removing
	Pre-tightening specification: diagonal sequence to 10 Nm.
	M8 tightening specification: diagonal sequence to 20 Nm.
	M8 tightening specification: diagonal sequence with 180° additional turn
13 - 0	Circlip
	Always replace after removing
	Removing and installing using Circlip Pliers -VW 161A-
14 - 8	Seal
	Always replace after removing
	The adhesive surface on CV joint must not have any grease or oil on it.
15 - I	nner CV Joint
	Only replace completely
	Divide the grease evenly in the joint
	Removing. Refer to ⇒ Fig. ""Inner CV Joint, Removing"", page 240 .
	Installing. Refer to <u>⇒ Fig. ""Inner CV Joint, Pressing On"", page 241</u> .
	Check using the Vehicle Diagnostic Tester. Refer to <u>⇒ C7.6 V Joint, Checking", page 244</u> .
16 - F	Plate Spring
	With inner spline
	Installation position. Refer to ⇒ Fig. ""Plate spring installation position on the inner and outer joint"", page 240 .

7.2 **Drive Axle Threaded Connection,** Loosening and Tightening

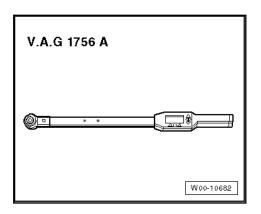
Special tools and workshop equipment required

♦ Socket AF 24 mm -T10361A-

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Digital Torque Wrench -V.A.G 1756 A-



Do not load the wheel bearing if the wheel-side drive axle threaded connection is loose.

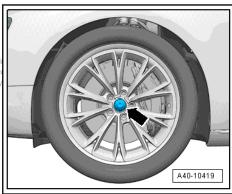
If the wheel bearings are under the load of the vehicle weight, the wheel bearing will be damaged. This reduces the service life of the wheel bearings. Therefore observe the following:

- Bolt loosening procedure
- Vehicles without a drive axle must not be moved, otherwise the wheel bearing will be damaged. If vehicle does have to be moved, always note the following points:
- Install an outer joint in place of the drive axle.
- Tighten the outer joint to 200 Nm.

Bolt, Loosening



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- With the vehicle resting on its wheels, loosen the bolt with the Socket AF 24 mm -T10361A- a maximum of 90°, otherwise the wheel bearing will be damaged.
- Lift the vehicle just enough so that the wheels are hanging free.
- Apply the brakes (a second technician required).
- Remove the bolt -arrow-.

Bolt, Tightening

Replace the bolt.



Note

Wheels must not yet touch the ground when tightening the drive axle or the wheel bearing can be damaged.

Apply the brakes (a second technician is required).

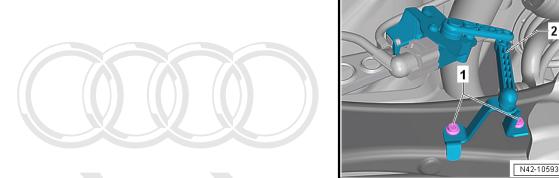
- Tighten the bolt to 200 Nm.
- Set the vehicle on its wheels.
- Bolt -WHT.005.437- / black 180° additional turn.
- Bolt -WHT.005.437.A- / silver 90° additional turn.

7.3 Drive Axle, Removing and Installing

Removing

- Before starting the procedure, measure the distance from the center of the wheel to the lower edge of the wheel housing. Refer to \Rightarrow B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11.
- Loosen the drive axle threaded connection. Refer to ≥ A7.2 xle Threaded Connection, Loosening and Tightening", page 233.
- Remove the wheel. Refer to \Rightarrow a1 nd Tires", page 255.
- Remove the coil spring. Refer to ⇒ R5.4 emoving and Installing", page 192.
- Remove the stabilizer bar. Refer to ⇒ B3.2 ar, Removing and Installing", page 168

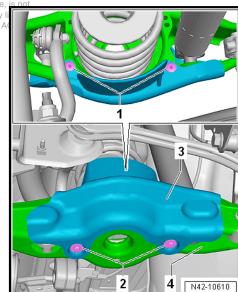
Applies to vehicles with a level control system sensor



Remove the left and right bolts -1- from the linkage -2- for the rear level control system sensor.

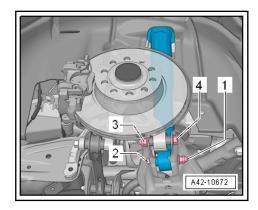
Applies to vehicles with stone chip protection

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- Remove the expanding rivets -1-.
- Remove the bolts -2- and the stone chip protection -3-.

Applies to all



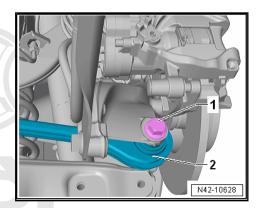
Remove the nut -3- and the bolt -4-.



Note

Ignore -items 1 and 2-.

Remove the bolt -1- for the tie rod -2-.



- Disconnect drive axle from the rear final drive.
- mercial purposes, in part or in whole, is not Tilt the wheel bearing housing joutward and remove the drive does not guarantee or accept any liability axle from the rear final drive. with respect to the correctness of information in this document. Copyright by AUDI AG.
- Remove the hub from the drive axle outer joint.

Installing

Install in the reverse order of removal while noting the following:

- Lightly coat the splines on the outer joint with assembly paste before installing the outer joint into the wheel hub. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- Tighten the threaded connections in the curb weight position. Refer to \Rightarrow B3.16 earing in Curb Weight Position, Lifting Vehicles with Coil Spring", page 11 .

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the > Vehicle diagnostic tester.

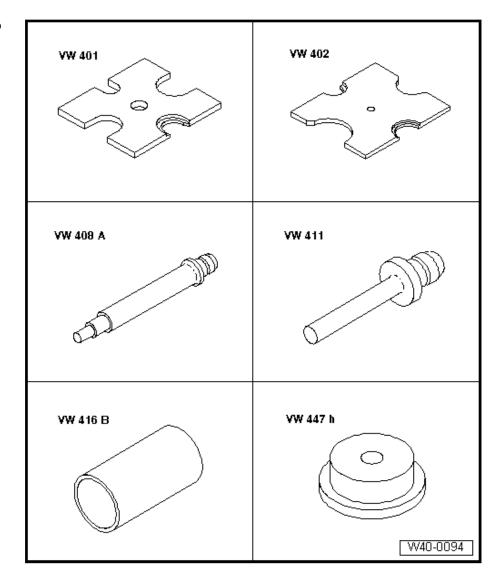
- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.

- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems.
- 14 Electronic Damping Control Module -J250
- 14 Electronic Damping Control Module, functions
- Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to <u>⇒ A3.1 ssistance Systems Front</u> Camera, Calibrating", page 275.
- For vehicles with a level control system sensor, perform a headlamp basic setting. Refer to > Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

Tightening Specifications

- Refer to ⇒ -4.1 Transverse Link", page 174
- Refer to ⇒ -4.2 Tie Rod", page 176
- Refer to ⇒ -5.1 Suspension Strut, Shock Absorber, Spring", page 184
- Refer to ⇒ -2.2 Rear Level Control System Sensor", page
- Protected y Refer to MA7.2 xle Threaded Connection, Loosening and permitted unless represented by Albi Age 233 AG does not guarantee or accept any liat with respect to the correctness of information in this document. Copyright by AUDI AG.
 - ◆ Refer to ⇒ -7.1 Drive Axle", page 231
 - ◆ Refer to ⇒ a1 nd Tires", page 255
 - 7.4 Drive Axle, Disassembling and Assembling

Special tools and workshop equipment required

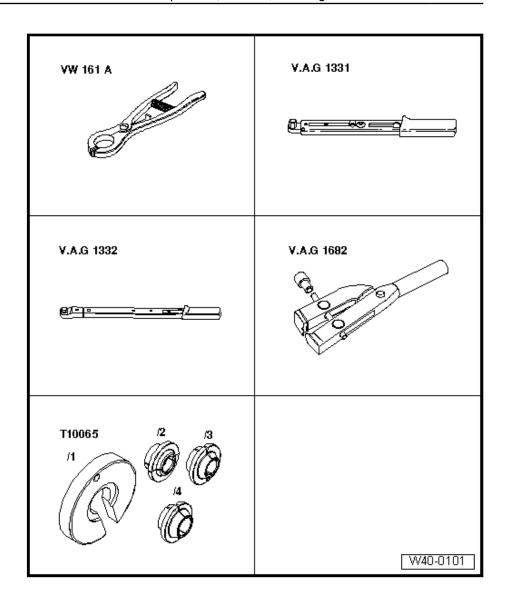


- Press Plate -VW 401-
- Press Plate -VW 402-
- Press Piece Rod -VW 408 A-
- Press Piece Rod -VW 411-
- Press Piece 37mm -VW 416 B-
- Press Piece Multiple Use -VW 447 H-



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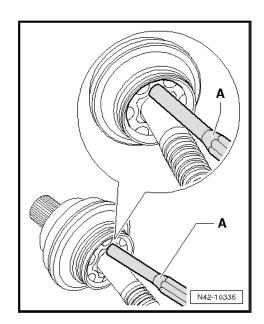
- ♦ Circlip Pliers -VW 161 A-
- ◆ Torque Wrench, 6-50Nm -VAG 1331A-
- ♦ Torque Wrench, 40-200Nm -V.A.G 1332A-
- ♦ Clamping Pliers -V.A.G 1682 A-
- ◆ Tripod Joint Tool -T10065-

Outer CV joint, pressing off



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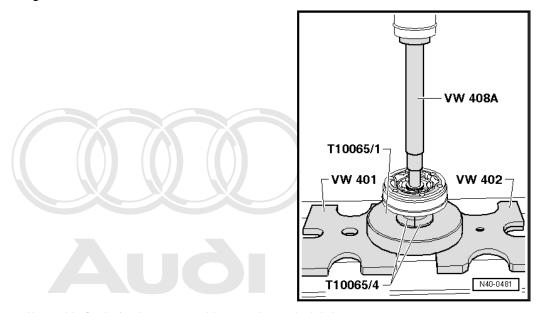


- Clamp the drive axle in a vise with jaw protectors.
- Fold back the boot.
- Push the CV joint off of the drive axle using a drift -A-.
- The drift must be installed exactly on the CV joint ball hub.

Outer CV Joint, Installing

Use a plastic mallet to install it on the shaft until the circlip engages.

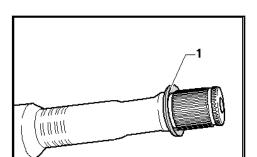
Inner CV Joint, Removing



- Press off the CV boot from initial cusing drift or commercial purposes, in part or in whole, is not permitted unless admonsed by AuDI AG. AUDI AG does not guarantee or accept any liability
- Remove the circlip. Remove the circlip.
- Remove both clamps, and push the CV boot toward outer joint.

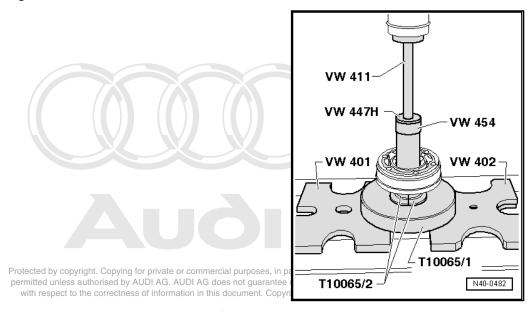
Plate spring installation position on the inner and outer joint

A40-0158



- Plate Spring
- Press on joint until it stops.
- Install the circlip.

Inner CV Joint, Pressing On

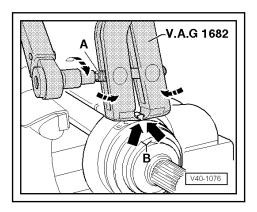




Note

Chamfer on inner diameter of ball hub (splines) must face the contact shoulder on the drive axle.

Tightening clamp on the outer joint



- (**((() () () () () () ()** Audi TT 2015 ➤
- Attach the Clamping Pliers -V.A.G 1682- as shown. When doing this, make sure that edges of the pliers are positioned in the corners -B arrows- of the clamp.
- Tighten the clamp by turning the spindle -A- using a torque wrench (do not tilt the pliers).
- Tightening specification: 25 Nm.

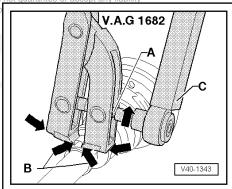


Note

- A stainless steel clamp must be used due to hardness of CV boot material (compared to rubber). This clamp can only be tensioned using Clamping Pliers -V.A.G 1682 A-.
- Make sure the spindle threads -A- on the pliers move easily. Lubricate with MoS2 grease, if necessary.
- If difficult to tighten, for example because of dirty threads, the proper clamping force of the clamping sleeve will not be reached even when tightened to the specification.

Tension the clamp on the small idiameter opyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does ot quarantee or ac

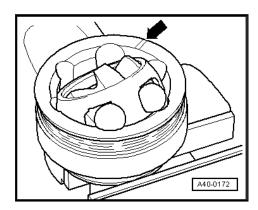
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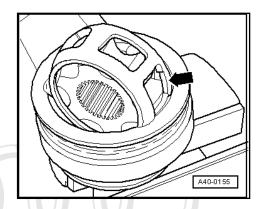
7.5 Outer CV Joint, Checking

It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.

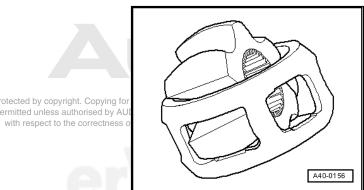
Removing



- Before disassembling, mark the ball hub position in relation to the ball cage and housing with an electric engraver or sharpening stone -arrow-.
- Tilt the ball hub and the ball cage and remove the balls one after another.
- Turn the cage until two cage windows -arrow- rest on joint housing.



- Lift out cage with hub.
- Swing a hub segment in a cage window.



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- Fold hub out from cage.



Note

- The six balls for each joint belong to a tolerance group. Check the axle stub, hub, cage and balls for small depressions (pitting build-up) and chafing.
- Excessive backlash in the joint is noticeable by a thump during load alternations. The joint should be replaced in these cases.
- Flattening and running marks on the balls are no reason to replace a joint.

Installing

Install in the reverse order of removal while noting the following:

- Press the quantity of grease specified in the table into the joint body. Refer to <u>⇒ page 231</u>.
- Insert cage with hub into joint body.



Note

Cage must be inserted on the correct side.

- Press in the opposite facing balls one after the other, and the old ball hub position to the ball cage and to the joint housing must be replicated.
- Install the new circlip in the shaft.

Distribute the remaining grease in the joint boot.

7.6 Inner CV Joint, Checking

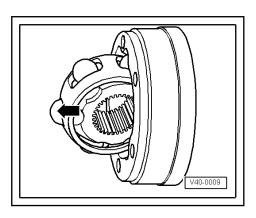
 It is necessary to disassemble the joint whenever replacing the grease or if the ball surfaces show wear or damage.



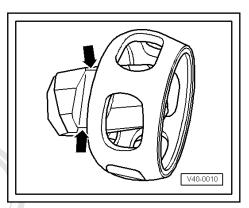
Note

Ball hub and joint piece are paired. Before removing, mark in relation to each other using a waterproof felt-tip pen.

Removing



- Tilt the ball hub and ball cage.
- Remove the joint in the direction of the arrow.
- Remove the balls from the cage.
- Flip out ball hub from ball cage via the ball race -arrows-.



 Check the joint, ball hub, ball cage and balls for small broken off depressions (pitting) and chafing.



Note

Excessive backlash in joint will be noticed as a knock during load changes. Joint must be replaced in such cases. Flattening and running marks on the balls are no reason to replace the joint.

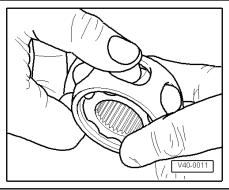
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Installing



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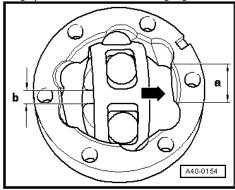
Install in the reverse order of removal while noting the following:

- Insert the ball hub into the ball cage via two chamfers. The installation position is arbitrary. Press balls into cage.
- Insert hub with cage and balls upright into joint piece.

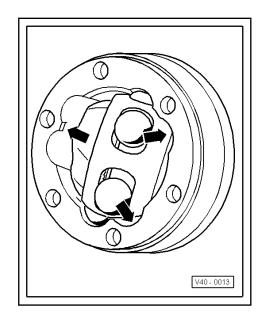


Note

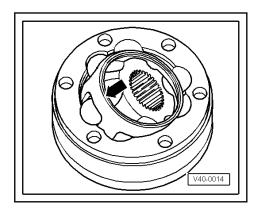
When inserting, make sure that in each case the wide gap -a- at joint piece contacts narrow gap -b- at hub after swinging in.



- Chamfer on inner diameter of ball hub (splines) must face the large diameter of the joint.
- Use the felt-tip pen markings made during removal to help with assembly.
- Swing in ball hub, to do so swing out hub far enough from cage -arrows- so that the balls have the distance of the running paths.



Swing in hub with balls by pressing forcefully onto cage -arrow-.



CV joint, checking for function:

The CV joint is properly assembled, if the ball hub can be slid back and forth by hand over the entire length adjustment.



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Self-Leveling Suspension

Electronic Damping

⇒ -1.1 Electronic Damping", page 247

⇒ E1.2 lectronic Damping Control ModuleJ250, Removing and Installing", page 249

Overview - Electronic Damping 1.1



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1 - Front Level Control System Sensor

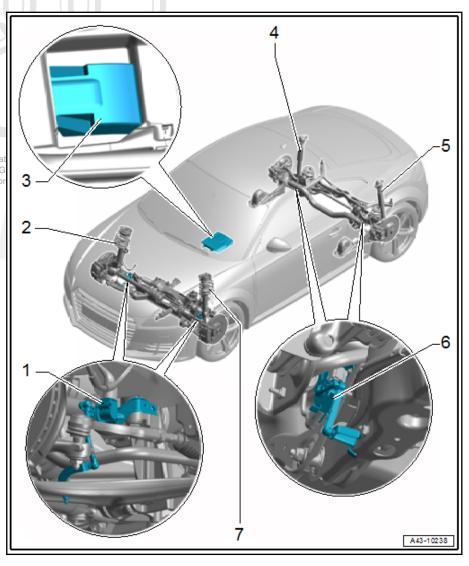
- Left Front Level Control System Sensor -G78-, Right Front Level Control Sensor -G289-
- Removing and Installing. Refer to ⇒ L2.3 eft Front Level Control System
 ProSensorG78/Right Front Level Control System Ac SensorG289, Removing and Installing", page 251

2 - Shock Absorber with Right Front Damping Adjustment Valve -N337-

- Suspension strut, removing and installing. Refer to \Rightarrow S3.2 trut, Removing and Installing", page 63
- Service the suspension strut. Refer to ⇒ S3.3 trut, Servicing", page 69

3 - Electronic Damping Control Module -J250-

- □ Component location: under the right front seat
- Removing and Installing. Refer to ⇒ E1.2 lectronic Damping Control ModuleJ250, Removing and Installing", page 249



- ☐ If the Electronic Damping Control Module -J250- is being replaced, the "Replace control module" function must be performed using the ⇒ Vehicle diagnostic tester.
- ☐ If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275.

4 - Shock Absorber with Right Rear Damping Adjustment Valve -N339-

- □ Removing and Installing. Refer to ⇒ A5.2 bsorber, Removing and Installing", page 185.
- Servicing. Refer to ⇒ A5.3 bsorber, Servicing", page 188.

5 - Shock Absorber with Left Rear Damping Adjustment Valve -N338-

- Removing and Installing. Refer to ⇒ A5.2 bsorber, Removing and Installing", page 185.
- ☐ Servicing. Refer to ⇒ A5.3 bsorber, Servicing", page 188.

6 - Rear Level Control System Sensor

- ☐ Left Rear Level Control System Sensor -G76-, Right Rear Level Control System Sensor -G77-
- Removing and Installing. Refer to ⇒ L2.4 eft Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Removing and Installing", page 253.

7 - Shock Absorber with Left Front Damping Adjustment Valve -N336-

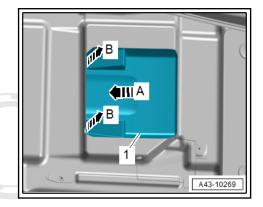
- □ Removing and installing the suspension strut. Refer to ⇒ S3.2 trut, Removing and Installing", page 63.
- Servicing the suspension strut. Refer to ⇒ S3.3 trut, Servicing", page 69.

1.2 **Electronic Damping Control Module -**J250-, Removing and Installing

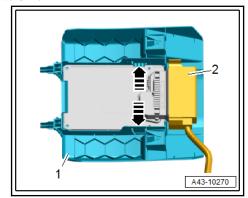
Special tools and workshop equipment required

♦ Vehicle Diagnostic Tester

Removing



- Move the right front seat all the way forward and up.
- First remove the cover -1- upward at the rear with the Electronic Damping Control Module -J250- in the direction of -B arrows- and then remove toward the rear out of the bracket in the direction of -A arrow-.
- Unclip and remove the Electronic Damping Control Module uposes, in part or in whole, is not -J250- from the bracker ittel une the direction of a does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Disconnect the connector -2-.

Installing

Install in the reverse order of removal while noting the following:

- If the Electronic Damping Control Module -J250- is being replaced, the "Replace control module" function must be performed using the > Vehicle diagnostic tester.
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275.

2 Level Control System Sensor

- ⇒ -2.1 Front Level Control System Sensor", page 250
- ⇒ -2.2 Rear Level Control System Sensor", page 251
- ⇒ L2.3 eft Front Level Control System SensorG78/Right Front Level Control System SensorG289, Removing and Installing",
- ⇒ L2.4 eft Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Removing and Installing", page 253

2.1 Overview - Front Level Control System Sensor

1 - Nut

- Self-locking
- □ Always replace after removing
- □ 8 Nm

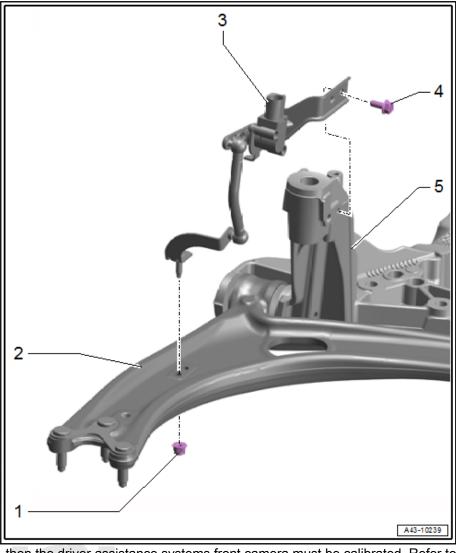
2 - Control Arm

3 - Front Level Control System Sensor

- Left Front Level Control System Sensor -G78-. Right Front Level Control Sensor -G289-
- Complete with coupling rod and upper and lower retaining plate
- □ The lever must face toward outside of vehicle
- Removing and Installing. Refer to = L2.3 eft Front Level Control System SensorG78/Right Front Level Control System SensorG289, Removing and Installing", page 251.
- □ After installing on vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.
- ☐ If the control position was reprogrammed on
 - a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275.
- □ Adjust the headlamps to the basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

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- 4 Bolt mitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability espect to the correctness of information in this document. Copyright by AUDI AG.
 - □ 8 Nm

5 - Subframe



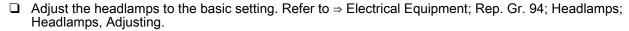
2.2 Overview - Rear Level Control System Sensor

- 1 Lower Control Arm
- 2 Subframe
- 3 Pop Rivet Nuts
- 4 Bolts
 - □ 5 Nm

5 - Rear Level Control System Sensor

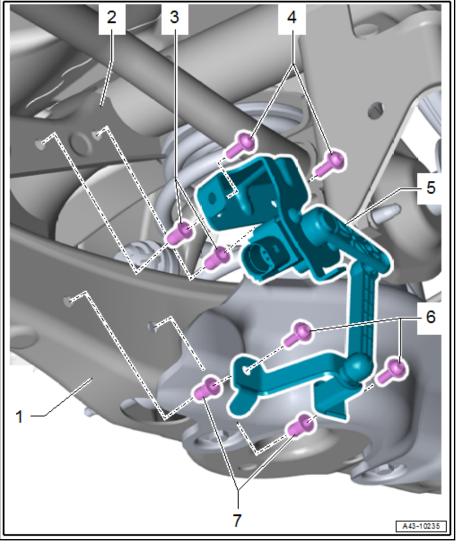
- Left Rear Level Control System Sensor -G76-, Right Rear Level Control System Sensor -G77-
- Complete with coupling Produind upper and lowper retaining plate by
- The lever must face toward outside of vehicle
- □ Removing and Installing. Refer to = L2.4 eft Rear Level Control System SensorG76/Right Rear Level Control System SensorG77, Removing and Installing", page 253.
- ☐ After installing on vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.
- ☐ If the control position was reprogrammed on a vehicle with lane as-





- 6 Bolts
 - □ 5 Nm
- 7 Pop Rivet Nuts
- 2.3 Left Front Level Control System Sensor -G78-/Right Front Level Control System Sensor -G289-, Removing and Installing

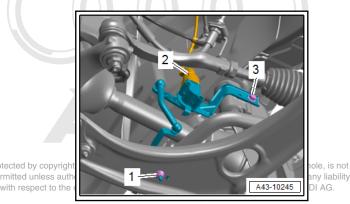
Special tools and workshop equipment required



Torque Wrench -V.A.G 1410-

V.A.G 1410 W00-11174

Removing



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- Disconnect the connector -2-.
- Remove the nut -1- and the bolt -3-.
- Remove the level control system sensor.

Installing

Install in the reverse order of removal while noting the following:



Note

- The level control system sensor lever must point toward vehicle exterior.
- The thread on the vehicle level sensor must be installed into the front hole in the control arm. The tab on the vehicle level sensor bracket must lock into the rear hole to ensure a correct installation position.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the ⇒ Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
- Select Diagnostic operating mode and Start diagnostics.
- Select the Select individual test tab and select the following tree structure consecutively:
- Chassis
- Wheel Damping Electronics
- 01 OBD-capable systems

- 14 Electronic Damping Control Module -J250
- Electronic Damping Control Module, functions
- Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275.
- Adjust the headlamps to the basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

Tightening Specifications

- Refer to ⇒ -2.1 Front Level Control System Sensor", page
- 2.4 Left Rear Level Control System Sensor -G76-/Right Rear Level Control System Sensor -G77-, Removing and Installing

Special tools and workshop equipment required

♦ Torque Wrench -V.A.G 1410-



Removing



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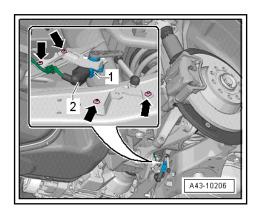
- Disconnect the connector -2-.
- Remove the bolts -arrows-.
- Remove the rear level control system sensor -1-.



Note

The installation position illustrated is for a FWD vehicle.





Installing

Install in the reverse order of removal while noting the following:



Note

The level control system sensor lever must point toward vehicle exterior.

On vehicles with electronic damping (Audi magnetic ride), perform the "Readapt control position" function using the \Rightarrow Vehicle diagnostic tester.

- Connect the ⇒ Vehicle diagnostic tester.
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 Select Diagnostic operating mode and Start diagnostic with respect to the correctness of information in this document. Copyright by AUDI AG.
- Select the Select individual test tab and select the following tree structure consecutively:
- **♦** Chassis
- ♦ Wheel Damping Electronics
- ♦ 01 OBD-capable systems
- ♦ 14 Electronic Damping Control Module -J250
- ♦ 14 Electronic Damping Control Module, functions
- ♦ 14 Control Position, readapting
- If the control position was reprogrammed on a vehicle with lane assist, then the driver assistance systems front camera must be calibrated. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275.
- Adjust the headlamps to the basic setting. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Headlamps; Headlamps, Adjusting.

Tightening Specifications

 Refer to ⇒ -2.2 Rear Level Control System Sensor", page 251



Wheels, Tires, Wheel Alignment

Wheels and Tires

This information can be found in the Wheel and Tire repair manual. Refer to ⇒ Wheel and Tire Guide; Rep. Gr. 44; Wheels, Tires and Tire Pressure Monitoring System, Assembling.

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2 Axle Alignment

- ⇒ A2.1 lignment Information", page 256
- ⇒ f2.2 or Axle Alignment, Evaluating", page 257
- ⇒ R2.3 equirements", page 259
- ⇒ W2.4 ork for Calibrating Driver Assistance Systems", page
- ⇒ C2.5 ontrol Number (PR Number) Explanations", page 260
- ⇒ P2.6 reparations", page 261
- ⇒ R2.7 un-Out Compensation", page 262
- ⇒ S2.8 teering Angle, Checking", page 262
- ⇒ A2.9 lignment Procedure", page 263
- ⇒ w2.10 ith Coil Springs, Checking the Curb Weight Position for Axle Alignment", page 264
- ⇒ A2.11 lignment Specified Values", page 264
- ⇒ A2.12 xle Camber, Adjusting", page 268
- ⇒ A2.13 xle Camber, Adjusting", page 270
- ⇒ A2.14 xle Toe, Adjusting", page 272
- ⇒ A2.15 xle Toe, Adjusting", page 272

2.1 Axle Alignment Information

Wheel alignment must only performed using VW/Audi-approved alignment equipment.

The wheel alignment computer has all the information for the vehicle alignment.

Current data »updates« are stored on Audi ServiceNet.

Refer to ⇒ Audi Service Net; Systems; Vehicle Alignment Software; Vehicle Alignment; Beissbarth.

Refer to ⇒ Audi Service Net; Systems; Vehicle alignment software; Vehicle alignment; Hunter.

Refer to ⇒ Audi Service Net; Systems; Vehicle Alignment Software; Vehicle Alignment; Corghi.

Refer to ⇒ Audi Service Net; Systems; Vehicle Alignment Software; Vehicle Alignment; John Bean.

Each time wheels are aligned, both front and rear wheels must be aligned.

Otherwise, the correct driving handling of the vehicle cannot be ensured.

Otherwise the center position of steering rack cannot be guaranteed!

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Note

- Do not carry out axle alignment until the vehicle has been driven 1000 to 2000 km in order to allow the coil springs to settle.
- The individual specifications should be followed as precisely as possible when making adjustments.
- Vehicle instability can also be caused by the wheels having a residual imbalance and/or radial run-out which is too great.



WARNING

If the vehicle has ESP or ABS, calibrate the Steering Angle Sensor -G85- using the Vehicle Diagnostic Tester after doing any adjusting on the suspension.

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WARNING

If vehicle will be driving on the streets, all screws and nuts must be tightened properly!



WARNING

There is a risk of injury if the engine starts automatically in vehicles with a Start/Stop System.

- For vehicles with an activated Start/Stop System (recognizable from a notification in the instrument cluster), the engine can be started automatically if needed.
- Make sure the Start/Stop system is deactivated when working on the vehicle (turn off ignition and turn the ignition back on if needed).

2.2 Need for Axle Alignment, Evaluating

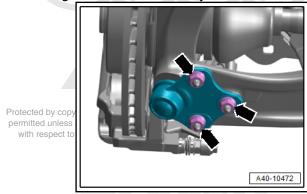
An axle alignment is necessary when:

- Vehicle shows handling problems.
- Involved in an accident.
- Axle components were removed.
- Tire wear patterns are uneven.

A component on the front axle was replaced:			A component on the rear axle was replaced:	Wheel alignment check required	
	Yes	No		Yes	No
Suspension Strut		X 1)	Shock Absorber		Х
Transverse link/bonded rubber bushing	Х		Coil Spring		Х
Ball Joint	Х		Wheel Bearing Housing	Х	
Wheel Bearing Housing	Х		Subframe	Х	
Tie Rod End/Tie Rod	Х		Lower Transverse Link	Х	
Steering Gear	Х		Upper Transverse Link	Х	

A component on the front axle was replaced:		lignment equired	A component on the rear axle was replaced:		lignment equired
	Yes	No		Yes	No
Subframe	Х		Tie Rod	Х	
Stabilizer Bar		X ²⁾	Trailing Arm	Х	
	X	X	Stabilizer Bar		Х

1)- if the installation position of the nuts -arrows- was marked, an axle alignment is not necessary.

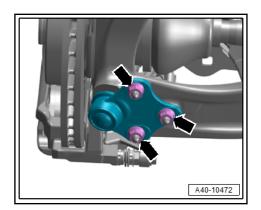


in whole, is not ept any liability AUDI AG.

 $^{2)}$ If the subframe was not secured with Subframe Alignment Assembly Tool Kit- Locating Pins -T10486/1-, an axle alignment is necessary.

A component on the front axle was removed and reinstalled:	Wheel alignment check required		A component on the rear axle was removed and reinstalled:	Wheel alignment check required	
	Yes	No		Yes	No
Suspension Strut		X 1)	Shock Absorber		Х
Control Arm/Bonded Rub- ber Bushing	Х		Coil Spring		Х
Ball Joint		χ 1) Wheel Bearing Housing			Х
Wheel Bearing Housing		χ 1) Subframe			X ²⁾
Tie Rod End/Tie Rod	Х	Lower Transverse Link X			
Steering Gear	Х		Upper Transverse Link X		
Subframe		X ²⁾	Tie Rod		Х
Stabilizer Bar		X ²⁾	Trailing Arm	Х	
			Stabilizer Bar		Х

1)- if the installation position of the nuts -arrows- was marked, an axle alignment is not necessary.



²⁾ If the subframe was not secured with Subframe Alignment Assembly Tool Kit-Locating Pins -T10486/1-, an axle alignment is necessary.

2.3 **Test Requirements**

- Check the suspension, steering and steering linkage for excessive play and damage, repair if necessary.
- Tread depth difference may be no more than 2 mm on an
- Tires inflated to prescribed pressure
- Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- The steering wheel must be evened out the center not guarantee or accept any liability position before beginning the measuring and adjusting. Use ent. Copyright by AUDI AG. Steering Wheel Scales -VAS 6458A- for this.
- Vehicle is in curb weight position. Refer to 2)
- 2) Curb weight means: the weight of the vehicle ready for the road (completely filled fuel tank and windshield washer fluid reservoir, spare tire, vehicle tool kit, vehicle jack)
- Perform wheel run-out compensation: permissible axial runout of the wheel rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.
- The measurement sensor must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.
- If necessary, contact the manufacturer for instruction on the proper use of the equipment.
- Vehicle alignment platforms and the alignment equipment/alignment computers can deviate from their original calibration over time therefore they should be calibrated at least once a year during maintenance.
- Handle highly sensitive units with care.

2.4 Preparation Work for Calibrating Driver Assistance Systems

Perform the following steps using "quick access" if one or more driver assistance systems on the vehicle will be calibrated (without a previous axle alignment):

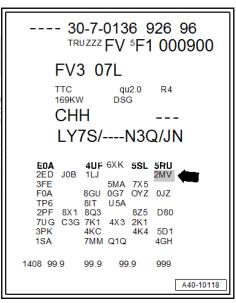
- Before driving the vehicle onto the alignment stand, make sure there is enough space between the vehicle and the calibration device. The distance between the calibration device and the vehicle must be 120 cm ± 2.5 cm (47.24 ± 0.98 in.).
- If there is not sufficient space, drive vehicle backward on alignment stand in order to be able to use the corresponding space.
- Check the DTC memory and correct any malfunctions before beginning the calibration.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.
- · Move the wheels so that they are straight.
- Connect the

 Vehicle diagnostic tester to the vehicle and guide the diagnostic cable through the open window.
- The vehicle exterior lamps are off.
- · All the vehicle doors are closed.
- Using the screen, turn on the calibration on the wheel alignment computer.

2.5 Production Control Number (PR Number) Explanations

Vehicle Data Label





The PR number on the vehicle data label indicates which suspension is equipped.

Example of a vehicle data label:

2MV -arrow- = PR number sport suspension with Audi magnetic ride

Vehicle data label component location. Refer to ⇒ Maintenance; Booklet 826; General Information; Vehicle Data Label.

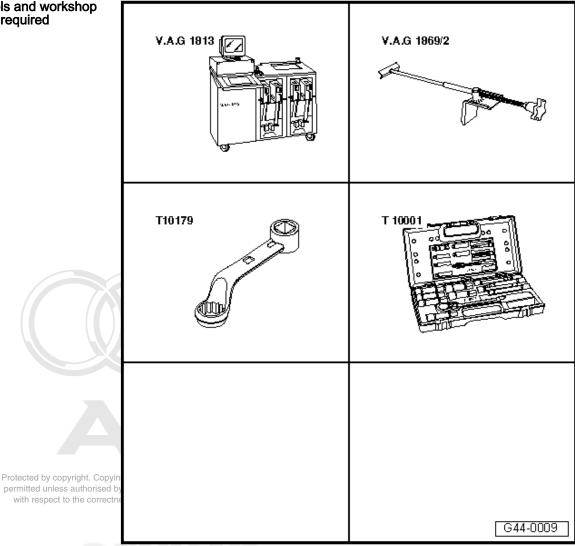
ELSA/Vehicle-Specific Notes

The relevant information regarding the suspension installed can also be retrieved via ELSA/vehicle-specific information.

- Standard suspension = 1BA
- Sport suspension = 1BV
- Sport suspension with Audi magnetic ride = 1BL / 1BQ /
- ♦ Special sport version = 1BD

2.6 **Measurement Preparations**

Special tools and workshop equipment required



- Wheel Alignment Computer -V.A.G 1813F- or VW/Audi approved wheel alignment devices
- Brake Pedal Actuator -V.A.G 1869/2-.
- Insert Tool 18mm -T10179-

- Shock Absorber Set -T10001-
- The measurement sensor must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.
- The steering wheel must be "evened out" into the center position before beginning the measuring and adjusting. Use Steering Wheel Scales -VAS 6458A- for this.

Perform the following steps using "quick access" if one or more driver assistance systems on the vehicle will be calibrated (with by copyright. Copying for private or commercial purposes, in part or in whole, is not unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability out a previous axle alignment): with respect to the correctness of information in this document. Copyright by AUDI AG.

- Before driving the vehicle onto the alignment stand, make sure there is enough space between the vehicle and the calibration device. The distance between the calibration device and the vehicle must be: $120 \text{ cm} \pm 2.5 \text{ cm} (47.24 \pm 0.98 \text{ in.})$.
- If there is not enough space, back the vehicle onto the wheel alignment platform. A corresponding surface can also be used.
- Check the DTC memory and correct any malfunctions before beginning the calibration.
- Vehicle accurately aligned, suspension bounced and rocked several times
- Make sure that the sliding plates and turn tables are not touching the end stop when checking the wheel alignment.
- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Move the wheels so that they are straight.
- Connect the ⇒ Vehicle diagnostic tester to the vehicle and guide the diagnostic cable through the open window.
- The vehicle exterior lamps are off.
- All the vehicle doors are closed.
- Using the screen, turn on the calibration on the wheel alignment computer.

2.7 Wheel Run-Out Compensation

A correct toe-in adjustment will not be possible without performing lateral run-out compensation!

The lateral run-out of the wheel must be balanced (compensated for). Otherwise, the measurement result will be false.

The permitted axial run-out of the rims can exceed the specified toe setting tolerance. If compensation for wheel run-out is not performed, it will not be possible to obtain a correct toe-in adjustment.

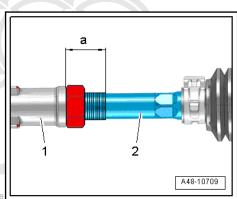
Follow the operating instructions provided by the manufacturer of the alignment equipment.

2.8 Maximum Steering Angle, Checking

The wheel alignment computer determines the maximum steering angle.



- If the maximum steering angle was determined on the alignment tester and the value is not within the tolerance, then check for damage or deformations to the steering and suspension components and evaluate the tie rod symmetry. In this case, shorten the "longer" tie rod end (install it deeper into the tie rod) and replace any damaged components.
- If a crooked steering wheel position was determined on the alignment equipment when setting the center position of the steering, then check the steering and suspension components for damage or deformations and replace any damaged components. Check the tie rod symmetry as well.
- Measure dimension -a- on the "shorter" tie rod head. Shorten the "longer" tie rod head to the same dimension. To do this, install the tie rod head -1- deeper on the tie rod -2-.



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Dimension -a- of right tie rod end = dimension reprofleft the ectness of information in this document. Copyright by AUDI AG. rod end; maximum permissible difference between right and left less than 2 mm.

When returning the steering to its center position, let the steering wheel "come to its center" using even movements.

2.9 Axle Alignment Procedure

Work procedure for axle alignment, overview



Note

The vehicle must only be measured at curb weight position. Refer to ⇒ page 259.

The following sequence of procedure steps must be observed.

- Drive the vehicle onto the alignment rack without tension. Move the vehicle back and forth if necessary to relieve any tension on the axle components.
- The steering wheel must be "evened out" into the center position before beginning the measuring and adjusting. Use Steering Wheel Scales -VAS 6458A- for this.
- Perform wheel run-out compensation. Refer to ⇒ R2.7 un-Out Compensation", page 262.
- Check the maximum steering angle. Refer to ⇒ \$2.8 teering Angle, Checking", page 262.
- 5 -Check front axle camber and adjust if necessary. Refer to ⇒ A2.12 xle Camber, Adjusting", page 268
- Check rear axle camber and adjust if necessary. Refer to ⇒ A2.13 xle Camber, Adjusting", page 270 .

- 7 Check rear axle toe and adjust if necessary. Refer to ⇒
 A2.14 xle Toe, Adjusting", page 272.
- 8 Check the front axle toe and adjust if necessary. Refer to ⇒ A2.15 xle Toe, Adjusting", page 272.



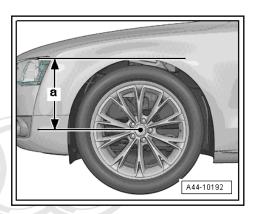
Note

- ♦ If adjustments were made to the suspension during the axle alignment on vehicles with ESP or ABS, a calibration of the Steering Angle Sensor -G85- must be performed using the ⇒ Vehicle diagnostic tester.
- If the rear axle setting was changed, the following driver assistance systems must be calibrated:
- ◆ Lane Assist. Refer to ⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275,

2.10 Vehicles with Coil Springs, Checking the Curb Weight Position for Axle Alignment

The curb weight position must be checked before beginning an axle alignment on vehicles with coil springs. Explanation of the curb weight position. Refer to > R2.3 equirements", page 259.

Determine the dimension -a-.



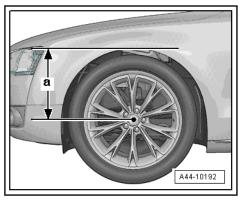
 Determine dimension -a- between the center of the wheel and the lower edge of the fender/wheel housing as shown.

Dimension -a- Overview

Chassis	Distance between the center of the wheel and the lower edge of the fend- er/wheel housing				
	Profesor	tə axle right. Copying	for private or co Rea	ri axle oses, in part or	in vTrolerance be-
	Specified size	I unless authorised by A spect to the concernes	s of Specified this	pes not quarantee or ad document. Oppinght k	েtween the right ^{y AUDI} and left
1BA / 1BL	374 mm (147.24 in.)	± 5 mm	372 mm (146.46 in.)	± 5 mm	Greater than or equal to 8 mm
1BV / 1BQ / 1BD / 2MV	364 mm (143.31 in.)	± 5 mm	362 mm (142.52 in.)	± 5 mm	Greater than or equal to 8 mm

2.11 Axle Alignment Specified Values

 The specified adjustment values correspond to the curb weight position. Refer to ⇒ page 264. To determine the curb weight position, the dimension -a- between the center of the wheel and the lower edge of the fender/wheel housing must be determined.



- Specified values valid for all engine versions.
- Production Control Number (PR number) explanation. Refer to \Rightarrow C2.5 ontrol Number (PR Number) Explanations", page 260 .

Standard Suspension 1BA	
◆ Front axle	
Total toe	10' ± 10'
Individual toe	5′ ± 5′
Camber (in straight-ahead position)	-44' ± 30'
Maximum permissible difference between both sides	maximum 30'
Toe differential angle at 20° steering angle. Refer to 5.	1° 19′ ± 20′
Caster	7° 23′ ± 30′
Maximum permissible difference between both sides	maximum 30'
Maximum steering angle on inner wheel	40° 38′
♦ Rear axle	
Total toe	26' ± 10'
Individual toe Protected by copyright. Copying for private or comm	ercial purposes, in part or in who1:35 ±15'
	his document. Copy#ght 120/0±130'. Refer to 3).
Maximum permissible difference between both sides	Maximum 30'. Refer to 4).
Maximum permissible deviation from the running direction	maximum 10'

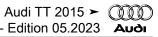
- 3) South Korea market version -1° 20′ ± 25′
- 4) South Korea market version maximum 25'

Sport Suspension with Audi Magnetic Ride (Controlled) 1BL			
◆ Front axle			
Total toe	10' ± 10'		
Individual toe	5′ ± 5′		
Camber (in straight-ahead position)	-44' ± 30'		
Maximum permissible difference between both sides	maximum 30'		
Toe differential angle at 20° steering angle. Refer to ⁵⁾ .	1° 19′ ± 20′		

Sport Suspension with Audi Magnetic Ride (Controlled) 1BL				
Caster	7° 23′ ± 30′			
Maximum permissible difference between both sides	maximum 30'			
Maximum steering angle on inner wheel	40° 38′			
♦ Rear axle				
Total toe	26′ ± 10′			
Individual toe	13′ ± 5′			
Camber	-1° 20′ ± 25′			
Maximum permissible difference between both sides	Maximum 25'			
Maximum permissible deviation from the running direction	maximum 10'			

Sport Suspension 1BV				
◆ Front axle				
Total toe	10' ± 10'			
Individual toe	5′ ± 5′			
Camber (in straight-ahead position)	-53' ± 30'			
Maximum permissible difference between both sides	maximum 30'			
Toe differential angle at 20° steering angle. Refer to 5.	1° 19′ ± 20′			
Caster	7° 23′ ± 30′			
Maximum permissible difference between both sides	maximum 30'			
Maximum steering angle on inner wheel	40° 38′			
♦ Rear axle				
Total toe	26' ± 10'			
Individual toe	13′ ± 5′			
Camber	-1° 20′ ± 30′			
Maximum permissible difference between both sides	maximum 30'			
Maximum Protected by spriving to private the commercial purposes. In part or in permissible dieviation from the running office and the protection with respect to the correctness of information in this document. Copyright by	n whole, is not ept any liability maximum 10' / AUDI AG.			

Special Sport Version = 1BD				
◆ Front axle				
Total toe	10' ± 10'			
Individual toe	5′ ± 5′			
Camber (in straight-ahead position)	-53' ± 30'			
Maximum permissible difference between both sides	maximum 30'			
Toe differential angle at 20° steering angle. Refer to 5).	1° 19′ ± 20′			
Caster	7° 23′ ± 30′			
Maximum permissible difference between both sides	maximum 30'			
Maximum steering angle on inner wheel	40° 38′			



Special Sport Version = 1BD				
♦ Rear axle				
Total toe	14' ± 10'			
Individual toe	7′ ± 5′			
Camber	-1° 20′ ± 30′			
Maximum permissible difference between both sides	maximum 30'			
Maximum permissible deviation from the running direction	maximum 10'			

Sport Suspension with Audi Magnetic Ride (Controlled) FN0 and 1BQ / 2MV				
◆ Front axle				
Total toe	10′ ± 10′			
Individual toe	5′ ± 5′			
Camber (in straight-ahead position)	-53' ± 30'			
Maximum permissible difference between both sides	maximum 30'			
Toe differential angle at 20° steering angle. Refer to 5.	1° 19′ ± 20′			
Caster	7° 23′ ± 30′			
Maximum permissible difference between both sides	maximum 30'			
Maximum steering angle on inner wheel	40° 38′			
♦ Rear axle				
Total toe	26′ ± 10′			
Individual toe	13′ ± 5′			
Camber	-1° 20′ ± 25′			
Maximum permissible difference between both sides mitted unless authorised by AUDI AG. AUDI AG diede not guaran	n part or in whole, is not ee or accept any liability			
Maximum permissible deviation from the running direction	maximum 10'			

Sport Suspension with Audi Magnetic Ride (Controlled) FN` and 1BQ				
◆ Front axle				
Total toe	10' ± 10'			
Individual toe	5′ ± 5′			
Camber (in straight-ahead position)	-53′ ± 30′			
Maximum permissible dif- ference between both sides	maximum 30'			
Toe differential angle at 20° steering angle. Refer to ⁵⁾ .	1° 19′ ± 20′			
Caster	7° 23′ ± 30′			
Maximum permissible dif- ference between both sides	maximum 30'			
Maximum steering angle on in- ner wheel	40° 38′			

Sport Suspension with Audi Magnetic Ride (Controlled) FN` and 1BQ	
♦ Rear axle	
Total toe	14' ± 10'
Individual toe	7′ ± 5′
Camber	-1° 20′ ± 25′
Maximum permissible dif- ference between both sides	Maximum 25'
Maximum permissible deviation from the running direction	maximum 10'

⁵⁾ Wheel stop on outer wheel is reduced by this amount. It can also be indicated negatively in the wheel alignment computer depending on manufacturer.

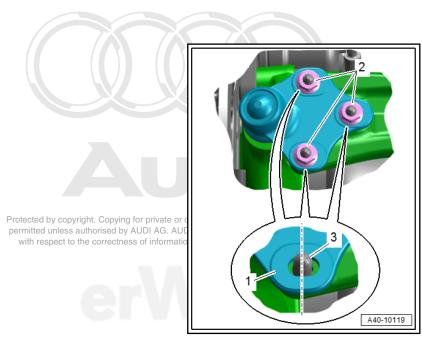
Front Axle Camber, Adjusting 2.12



Note

Only adjust the camber if measured value is outside the specified value tolerance of ± 30'.

Procedure



- Raise the vehicle for the following procedure.
- Remove the left and right nuts -2-.
- Position the new retaining piece -3- in the installation position and align it centered to the oblong holes on the ball joint -1- as shown.
- Tighten the new nuts to the tightening specification but without any additional turns.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Noise Insulation, Removing and Installing.

Applies to Audi TT Roadster

Remove the rear diagonal braces. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Diagonal Braces, Removing and Installing.

Applies to all



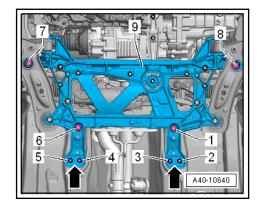
Caution

There is a risk of damaging the threads on the subframe threaded connection to the body.

- The subframe bolts on the body must not be loosened or tightened with an impact wrench.
- Always install all bolts by hand for the first few turns; es, in par

or in whole, is not nt by AUDI AG.

Remove and replace the bolts -1 to 8- one after the other and screw in the bolts by hand until the stop.



- Adjust the camber by sliding the subframe to the left or right
- Tighten the bolts -1 to 8-.



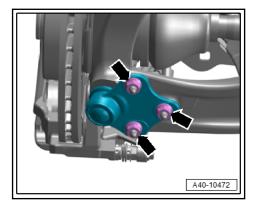
Note

Ignore the -arrows-.

If the camber value is OK:

- Tighten the left and right ball joint to the rotation angle.

If the camber value is not OK:



- Loosen the nuts -arrows-.
- Adjust camber using elongated holes in ball joint.
- Tighten the nuts -arrows-.

Tightening Specifications

- Refer to ⇒ -4.1 Lower Control Arm and Ball Joint", page 74
- Refer to ⇒ Body Exterior; Rep. Gr. 66; Noise Insulation; Overview - Noise Insulation.
- Diagonal braces. Refer to ⇒ Body Exterior; Rep. Gr. 66; Underbody Trim Panel; Overview - Underbody Trim Panels.

Rear Axle Camber, Adjusting 2.13

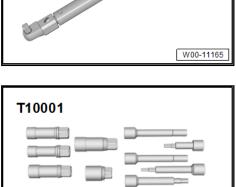
Special tools and workshop equipment required

◆ Torque Wrench, 40-200Nm -V.A.G 1332A-

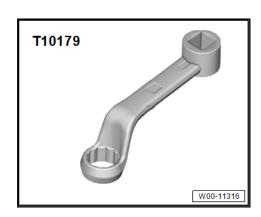


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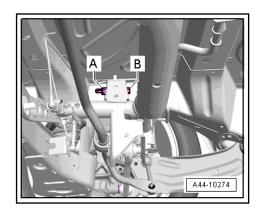
Insert Tool - 18mm -T10179-



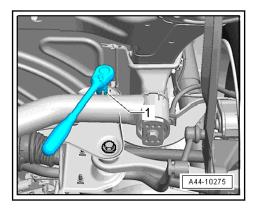
W00-11171



Procedure



- Remove the nut -A- on the upper control arm threaded connection from the subframe and loosely install a new nut.
- Set the camber by turning the eccentric bolt -B- using the 18 mm socket from the Shock Absorber Set -T10001-.



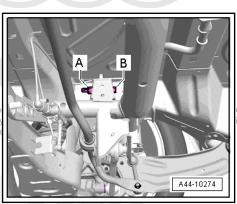
The eccentric bolt -B- can also be turned by turning the hex head at the "top of the bolt".



Note

The maximum adjustment range is 90° to left or right of center position.

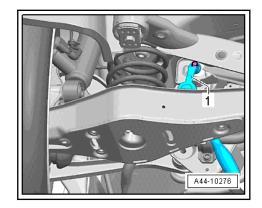
Tighten the nut -A- using the Insert Tool - 18mm -T10179-.



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- Use the Insert Tool - 18mm -T10179- -1- as shown.





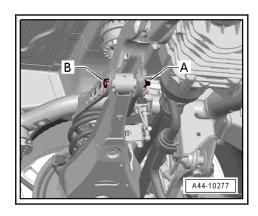
After the not right is tightered, check the camber value once not more. Refer to 3.42.11 lignment Specified Values in page Ag.

Tightening Specifications

Refer to <u>⇒ -4.1 Transverse Link"</u>, page 174

2.14 Rear Axle Toe, Adjusting

Procedure



- Remove the nut -A- on the lower control arm threaded connection from the subframe and loosely install a new nut.
- Adjust the toe by turning the eccentric screw -B-.



Note

The maximum adjustment range is 90° to left or right of center position.

- Tighten the nut -A-.
- After the nut -A- is tightened, check the toe value again. Refer to ⇒ A2.11 lignment Specified Values", page 264.

Tightening Specifications

◆ Refer to ⇒ -4.1 Transverse Link", page 174

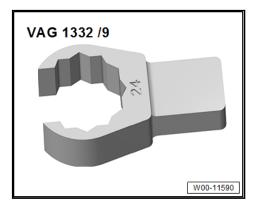
Front Axle Toe, Adjusting 2.15

Special tools and workshop equipment required

Torque Wrench, 40-200Nm -V.A.G 1332A-



Torque Wrench 1332 Insert - Open Ring Wrench - 24mm -V.A.G 1332/9-



Procedure



- To loosen or tighten the lock nut -2-, counterhold at the tie rod end -1- with a suitable toolh. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- Loosen the lock nut it 2 espect to the correctness of information in this document. Copyright by AUDI AG.
- Adjust toe on left and right wheels at the hex fitting -arrow-.



Note

- Make sure that boot on steering gear is not damaged or twisted. Twisted boots wear out quickly.
- Only tighten the lock nuts when the vehicle is resting on the ground - the tie rod end must be parallel to the suspension strut steering lever.
- Tighten the lock nut -2- and check the toe-in value again.

After tightening the lock nut -2-, it is possible that the value deviates slightly.

A44-10421

If the measured toe nevertheless lies within the tolerance, the adjustment is correct. Refer to ⇒ A2.11 lignment Specified Values", page 264

Tightening Specifications

◆ Refer to ⇒ -3.2 Tie Rods", page 302



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3 **Driver Assistance Systems Front** Camera

⇒ A3.1 ssistance Systems Front Camera, Calibrating", page 275

3.1 **Driver Assistance Systems Front Cam**era, Calibrating

Special tools and workshop equipment required

- Vehicle Diagnostic Tester
- Setting Device Basic Set -VAS 6430/1A-



- John Bean V3D Aligner -VAS6331- for ADR/ACC adjust-
- Wheel Alignment Computer



Note

- Check if the Driver Assistance Systems Front Camera -R242- is seated correctly in the bracket.
- Perform a visual inspection to see if the camera visual area
- Check the DTC memory and correct any malfunctions before beginning the calibration.

There are two choices for calibrating:

The "quick access"

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This procedure should be selected for the following activities if only the calibration will be performed.

- "No or incorrect basic setting/adaptation" is stored actively in the DTC memory.
- the Driver Assistance Systems Front Camera -R242- was removed and installed or replaced,
- the windshield is replaced or removed,
- On vehicles with electronic damping (Audi magnetic ride), the control position was reprogrammed.

The "complete alignment"

This procedure should be selected for the following activities if a calibration and a wheel alignment will be performed.

The rear axle toe was adjusted.

the vehicle suspension was changed, for example, changing from standard to Sport suspension.



Note

Both procedures are programmed in the wheel alignment computer. The respective procedure is performed automatically. It is only necessary to select the appropriate program for the procedure that will be performed.

Note the preparation work for calibrating assistance systems. Refer to ⇒ W2.4 ork for Calibrating Driver Assistance Systems", page 260.

Calibration without a previous axle alignment

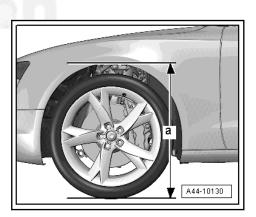
- Select the front camera calibration procedure in the alignment computer.
- Attach the quick-action clamps to all four wheels.
- Mount the measurement sensor to the rear wheels.
- Perform a wheel run-out compensation on the rear wheels.

Calibration with a previous axle alignment

- Connect the battery charger. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Charging.
- Move the wheels so that they are straight.
- Connect the Vehicle Diagnostic Tester to the vehicle and guide the diagnostic cable through the open window.

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- Turn off all vehicle exterior lamps utted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Close all vehicle doors.

Calibrating/adjusting procedure with or without a previous axle alignment



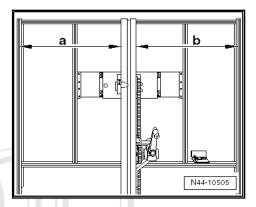
Determine and then note the body height -a- at all four wheels in the center of the wheel between the wheel contact surface and the lower edge of the fender.



Note

- The procedure is described on a John Bean V3D Aligner -VAŠ6331-.
- The procedure may vary if using other wheel alignment computers. In this case, follow the instructions on the wheel alignment computer screen.

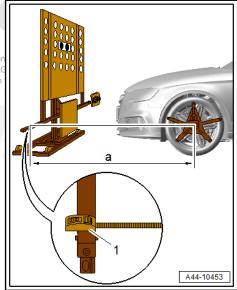
- Select the front camera calibration procedure in the alignment computer.
- Make sure the calibration board is positioned in the center and is locked in place.



Dimension a=b

Position the Setting Device Basic Set -VAS 6430/1A- at a distance of -A- 150 cm ± 2.5 cm from the center of the wheel hub on the front wheels to the beam on the Setting Device Basic Set -VAS 6430/1A- as shown.

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Measuring tape

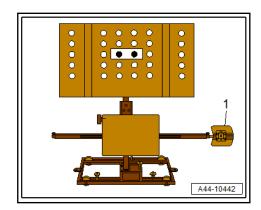


Note

The Setting Device Basic Set -VAS 6430/1A- must not be moved on the calibration beam.

Place the Camera -VAS 6331/1- -item 1- for the ADR/ ACC adjustment on the Setting Device - Basic Set -VAS 6430- on the right side and tighten.



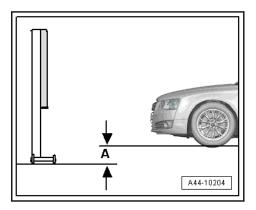




Note

The alignment stand must be in the lowest level position for the next step.

Enter the height value -A- between the Setting Device Basic Set -VAS 6430/1A- contact patch and the wheel contact surface as shown in the illustration and enter it in the alignment computer.

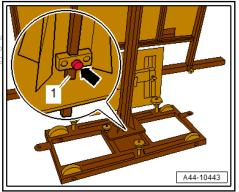




Note

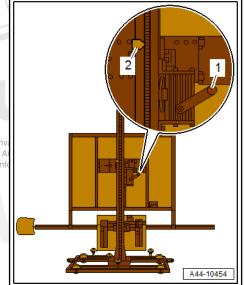
- Height calibration board for all Audi SUV models: 1400 mm (55.12 in.) + height value -A-.
- Height calibration board for all Audi non-SUV models: 1200 mm (47.24 in.) + height value -A-.
- Loosen the bolt -arrow- and place the measuring bar -1- on the floor.

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Adjust the calibration board to the specified height -2- according to the wheel alignment computer using the crank -1-.



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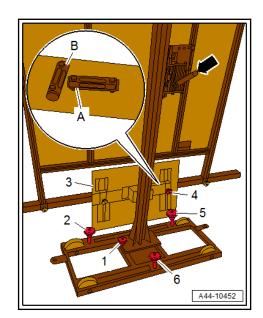
If the specified height was reached -2-, then the measuring bar must be pushed slightly upward and secured with the clamping screw.



Note

If in later procedures the height of the calibration board must be corrected, make sure the measuring bar is touching the ground when this is being done.

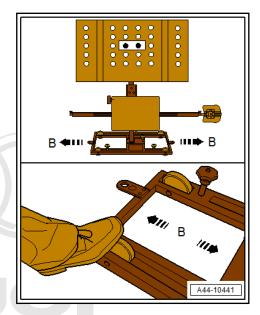
Balance the bubble level -A- using the adjusting screw -1-.



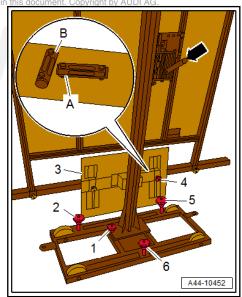
The bubble level adjustment -A- serves to balance the ground conditions.

Move the Setting Device Basic Set -VAS 6430/1A- sideways in the direction of -arrow B- until the display on the alignment computer is within the tolerance range.



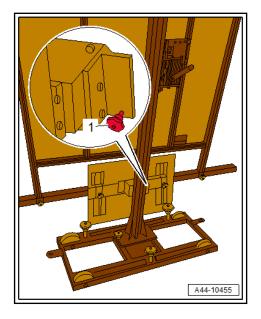


Secure the Setting Device Basic Set -VAS 6430/1A- by tight-ening the bolts -2- and -3- slightly- (This prevents the Setting or commercial purposes, in part or in whole, is not Device Basic Set -VAS 6430- from rolling away) or sed by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

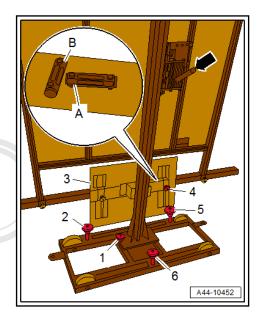


Turn the fine adjustment screw -1- until the display on the wheel alignment computer is within the tolerance range.





Balance the bubble level -A- using the adjusting screw -1-.



Level the bubble level -B- using the adjusting screw -2 and 3- in the scale.

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Perform any subsequent work asing the Vehicle Diagnostrat guarantee or accept any liability Too too.

The ⇒ Vehicle diagnostic tester is connected.

- Select the Diagnostic mode and start the diagnosis.
- Select the Test plan tab.
- Select the Select individual test button and select the following tree structure consecutively:
- ♦ Body
- Electrical system
- ♦ 01 OBD-capable systems
- ♦ A5 Driver Assistance Systems Front Camera R242
- A5 Driver Assistance Systems Front Camera, functions

A5 - Control module calibrating

The ⇒ Vehicle diagnostic tester continues with the calibrating procedure from here.

Now follow the instructions on the screen to perform the calibration.



Note

Next, determine the height of the body.

Enter the noted body height -a-.





Steering

Steering Wheel

⇒ -1.1 Steering Wheel", page 283

⇒ W1.2 heel, Removing and Installing", page 285

Overview - Steering Wheel 1.1



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1 - Bolt

- Always replace after removing
- □ 30 Nm +90°

2 - Steering Wheel

- □ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- □ Removing and Installing. Refer to ⇒ W1.2 heel, Removing and Installing", page <u> 285</u> .

3 - Steering Column Electronics Control Module -J527-

- With Airbag Spiral Spring/Return Spring with Slip Ring -F138-
- Removing and installing. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview - Steering Column Switch Module.

4 - Locking Bracket

☐ Use a T10 TORX® screwdriver to release. approximately 80 mm (3.15 in.) long

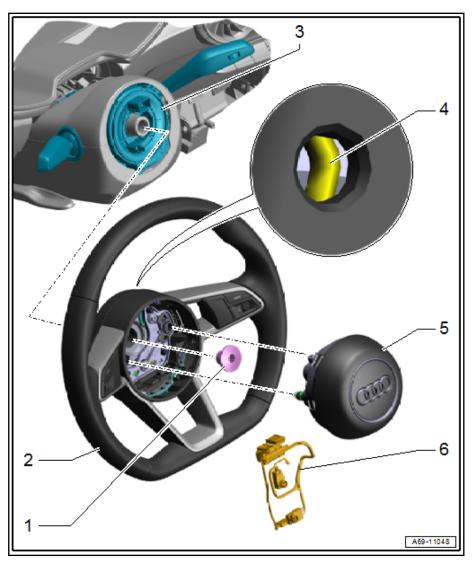
5 - Driver Side Airbag

☐ With Driver Airbag Igniter -N95- and Driver Airbag Igniter 2 -N250-



WARN-**ING**

Follow the safety precautions when working on airbags. Refer to ⇒ Body Interior; Rep. Gr. 00; Safety Precau-tions; Safety Precau-Working tions when with Pyrotechnic Components.



Removing and installing. Refer to ⇒ Body Interior; Rep. Gr. 69; Driver Side Airbag; Overview - Driver Side Airbag.

6 - Wiring Harness

☐ For Driver Airbag Igniter -N95-

1.2 Steering Wheel, Removing and Instal-



Note

Removal and installation of steering wheel must take place in center position (wheels in straight-ahead position).

Removing

- Move the steering wheel as far to the rear and down as possible. Use the full steering column adjustment range for
- Remove the airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69; Driver Side Airbag; Airbag Unit with Igniter, Removing and Installing.
- Bring wheels in the straight position.
- Remove the bolt -3-.



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- For reinstallation, mark the steering wheel installation position -1- to the steering column -2- -arrow-.
- Remove the steering wheel from the steering column.

Installing

Install in the reverse order of removal while noting the following:

- Front wheels in straight position.
- Note the marks on the steering column/steering wheel when reusing.
- A new steering wheel (without mark) must be mounted in the center position (the steering wheel spokes must be level and the wheels must be in the straight position).
- Install the airbag unit. Refer to ⇒ Body Interior; Rep. Gr. 69; Driver Side Airbag; Overview - Driver Side Airbag.
- Perform a road test.
- If the steering wheel is crooked, it must be removed again and reset on the steering column splines.

Tightening Specifications

Refer to ⇒ -1.1 Steering Wheel", page 283

2 **Steering Column**

- ⇒ -2.1 Steering Column", page 286
- ⇒ C2.2 olumn, Handling and Transporting", page 288
- ⇒ C2.3 olumn, Checking for Damage", page 289
- ⇒ C2.4 olumn, Removing and Installing", page 290
- ⇒ E2.5 lectronic Steering Column Lock Control ModuleJ764, Removing and Installing", page 297

2.1 Overview - Steering Column

The overview shows a LHD vehicle as an example. For RHD vehicles the layout is a mirror image.



Note

Always replace corroded bolts/nuts.



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1 - Bolt

- Always replace after removing
- Clean the threaded hole (for example, using a thread tap) before installing the new bolt.
- □ 20 Nm +90°

2 - Electronic Steering Column Lock Control Module -J764-

Removing and Installing. Refer to ⇒ E2.5 lectronic Steering Column Lock Control ModuleJ764, Removing and Installing", page 297

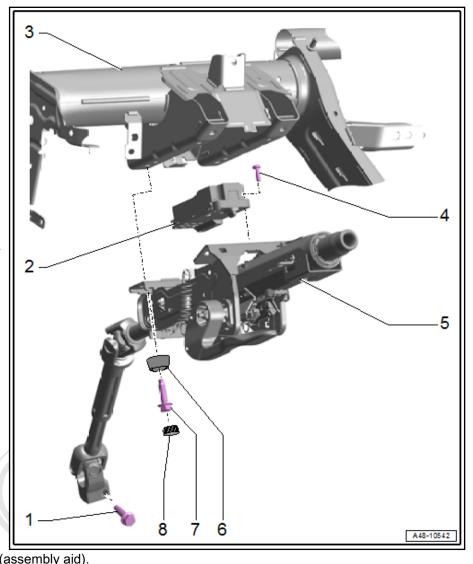
3 - Instrument Panel Central Tube

4 - Bolt

□ 6 Nm

5 - Steering Column

- ☐ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- □ Removing and Installing. Refer to \Rightarrow C2.4 olumn, Removing and Installing", page 290
- ☐ The steering column must be engaged on the instrument panel central tube mounting bracket when installing (assembly aid).



6 - Anti-Theft Protection Lower Section

- ☐ Dependent on the version. Refer to ⇒ Electronic Parts Catalog (ETKA)
- □ Always replace after removing

7 - Bolt

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- Always replace after removing authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- □ 20 Nm

8 - Anti-Theft Protection Upper Section

- ☐ Dependent on the version. Refer to ⇒ Electronic Parts Catalog (ETKA)
- □ Always replace after removing

2.2 Steering Column, Handling and Transporting



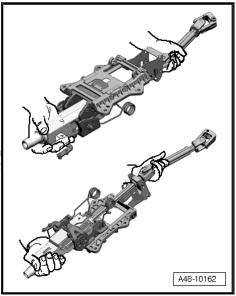
WARNING

- The steering column must always be handled correctly.
- Incorrect handling of steering column may cause damage to steering column and therefore lead to a safety risk.

Correct handling and transport of steering column

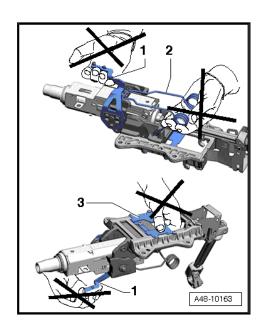


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- Transport steering column using two hands.
- Hold the steering column at upper steering rod tube and in area of upper universal joint.

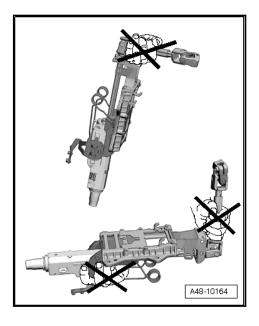
Incorrect handling of steering column



Transporting at the following components leads to damaging to steering column:

- Clamping Lever
- Weight Compensation Springs
- 3 -**Deformation Element**

Damage to universal joint bushings on lower steering column bushing due to:



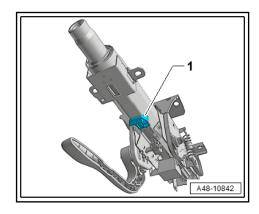
- Holding and carrying the steering column with a hand on the connecting shaft
- Bending joints more than 90°

Steering Column, Checking for Dam-2.3 age

Visual check

- Check whether parts of steering column indicate damage.
- Check the steering column end stop -1- for secure fit and damage.

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Note

If the steering column end stop is loose, damaged or missing, the steering column must be removed.

Function Test

- Check whether steering column can be turned without catching or difficulty of movement.
- Check if the steering column can be adjusted with respect to length and height.

2.4 Steering Column, Removing and Installing



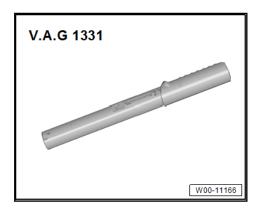
Note

- ♦ The steering column is delivered only as a complete replacement part. Service is not possible.
- ◆ The Electronic Steering Column Lock Control Module -J764can be removed and installed. Refer to ⇒ E2.5 lectronic Steering Column Lock Control ModuleJ764, Removing and Installing", page 297.

Special tools and workshop equipment required

◆ Torque Wrench, 6-50Nm -VAG 1331A-

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Also for equipment versions with anti-theft protection component:

- Steering column repair kit. Refer to the ⇒ Electronic Parts Catalog (ETKA)
- ♦ Screwdriver Set -VAS 5514-, not illustrated
- ♦ Protector Set -VAS 871 009-, not illustrated
- ♦ Hand drill
- ♦ 4 mm Drill Bit
- Protective Eyewear

Removing



Note

If equipped, install the anti-theft protection again in the same position.

- Bring wheels in the straight position.
- Pull the lever downward beneath steering column.
- Push the steering column as far down as possible and remove it.



Remove the steering wheel. Refer to ⇒ W1.2 heel, Removing and Installing", page 285.



WARNING

Follow the safety precautions when working on airbags. Refer to ⇒ Body Interior; Rep. Gr. 00; Safety Precautions; Safety Precautions when Working with Pyrotechnic Components.

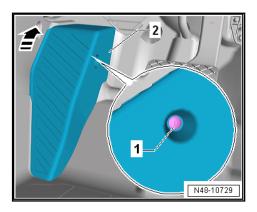
- Remove the driver side instrument panel cover. Refer to Promo Body Interior, Repr Grat 68; Storage Compartments/Covert peris Overview's Driver Side Instrument Panel Covert any liability
 with respect to the correctness of information in this document. Copyright by AUDI AG.
- Remove the footwell vent under the steering column. Refer to \Rightarrow Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Air Duct; Overview - Passenger Compartment Air Ducts and Air Distribution.

LHD vehicle



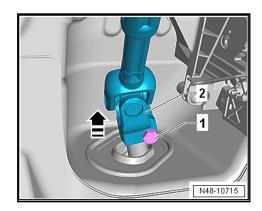
- Remove the nuts -arrows- and the footwell trim panel.

RHD vehicles

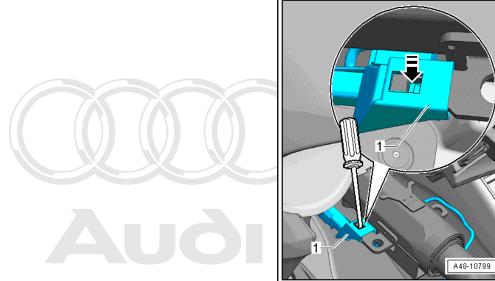


- Remove the footrest. Refer to ⇒ Body Interior; Rep. Gr. 70; Vehicle Interior Trim Panels; Footrest, Removing and Installing.
- Fold back the carpet.

Continuation for all vehicles



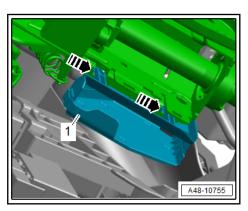
- Remove the bolt -1- and remove the universal joint -2- from the steering gear in the direction of -arrow-.
- Remove the steering column switch module. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview Steering Column Switch Module.
- Disengage the cable guide -1- from the steering column. To do so, release the tab in the direction of -arrow- using a small screwdriver and remove the cable guide forward from the steering column.



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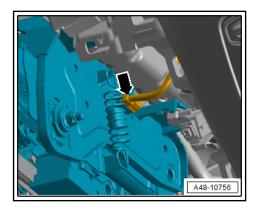
Release the lower wire police in collection of the Collection of the Control of the Collection of the Control of the Collection of the Control of the Contro and remove downward.



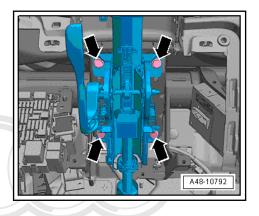


- Set the wire for the steering column aside.

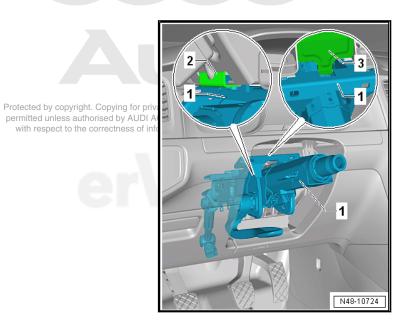
Disconnect the connector -arrow- from the Electronic Steering Column Lock Control Module -J764-.



- Remove the bolts -arrows- and hold the steering column.

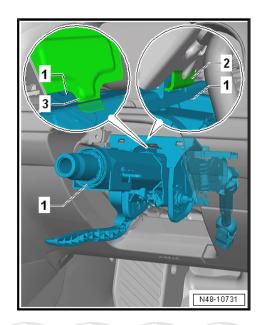


LHD vehicle



Disengage the steering column -1- upward from the tabs -2 and 3- on the mounting bracket and remove it.

RHD vehicles



Disengage the steering column -1- upward from the tabs
 -2 and 3- on the mounting bracket and remove it.

Continuation for all vehicles

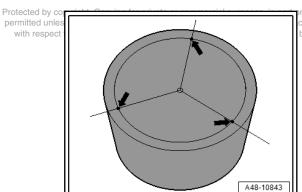


Caution

Refer to ⇒ C2.2 olumn, Handling and Transporting", page 288 for the correct handling and transport of steering column.

Equipment versions with anti-theft protection component:

Insert the Protector Set -VAS 871 009-.



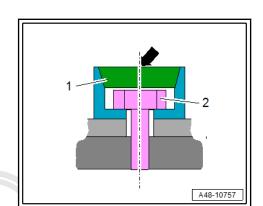
r in whole, is not ecept any liability by AUDI AG.



Caution

Wear protective eyewear for all of the following procedures.

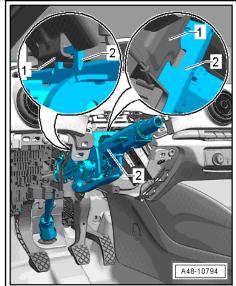
- Punch the anti-theft protection three times into the groove for the upper and lower section tilted at 120°. This ensures that the upper piece of the anti-theft protection component -1- does not turn when drilling.
- Punch the upper section of the anti-theft protection component -1- in the center and drill through with a carbide 4.5 mm drill bit from the repair kit.



- Drill the bolt -2- approximately 8 mm through the drill hole -arrow- in the upper section of the anti-theft protection component -1- using a commercially available 4.5 mm drill bit.
- Drill through the upper section of the anti-theft protection component -1- with a carbide 7.0 mm drill bit from the repair kit.
- Remove the bolt with anti-theft protection using screwdriver no. 4 from the Screwdriver Set -VAS 5514-.
- Vacuum up drill shavings.

Installing

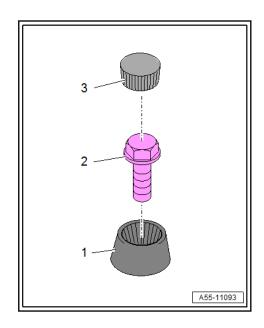
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Install in the reverse order of removal while noting the following:

- Check the steering column for damage. Refer to ⇒ C2.3 olumn, Checking for Damage", page 289
- Engage the steering column -2- in the assembly aids on the mounting bracket -1- at the top and bottom.
- Align the steering column to the mounting bracket and install.

Applies to vehicles with anti-theft protection

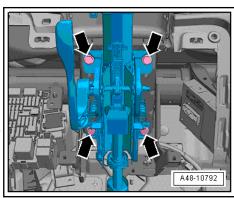


- Set the bolt -2- with the anti-theft protection lower section -1- in the installation position and tighten.
- Drive the anti-theft protection upper section -3- flush into the anti-theft protection lower section using a plastic mallet.

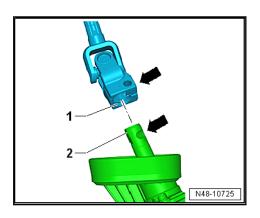
Applies to all



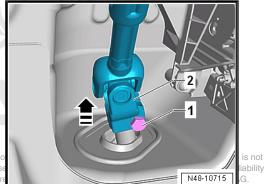
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- Tighten the upper steering column bolts -arrows-.
- Tighten the lower steering column bolts -arrows-.
- Mount the flat side on the universal joint -1- onto the flat area of the steering gear -2-.



- The opening on the steering gear must exactly align with the round hole for the bolt -arrows-.
- Clean the threaded hole (for example, using a thread tap) before installing the new bolt -1-.



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WARNING

Using the installed bolt -1-, make sure the universal joint is seated correctly by pulling it. Tighten the bolt.

After installing the steering column switch module, the Steering Angle Sensor -G85- must be calibrated by starting the respective program on the ⇒ Vehicle diagnostic tester.

Tightening Specifications

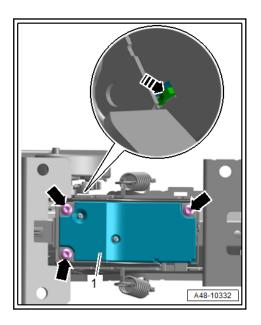
- Refer to ⇒ -2.1 Steering Column", page 286
- Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 87; Air Routing; Overview Passenger Compartment Air Routing and Air Distribution.
- Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbags; Overview - Knee Airbag
- Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Steering Column Switch Module; Overview - Steering Column Switch Module.
- 2.5 Electronic Steering Column Lock Control Module -J764-, Removing and Installing



Note

- If the Electronic Steering Column Lock Control Module -J764- was replaced, it must be activated by selecting the "Replace" function in "Guided Functions". Refer to ⇒ Vehicle Diagnostic Tester.
- Follow the instructions on the screen.

Removing



- To prevent the electronic steering column lock from locking, disconnect the battery ground cable when the ignition is turned on. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Remove the steering column. Refer to ⇒ C2.4 olumn, Removing and Installing", page 290.
- Remove the bolts -arrows-.
- Release the catch in the direction of -arrow- and remove the Electronic Steering Column Lock Control Module -J764--item 1-.

Installing

Install in the reverse order of removal while noting the following:

- Check the steering column for damage. Refer to ⇒ C2.3 olumn, Checking for Damage", page 2
- Follow all steps after connecting the projected by convicing Copying for private or commercial purposes, in part or in whole, is not the project of the proj trical Equipment; Rep. Gr. 27; Battery & Batte ing and Connecting.
- If the Electronic Steering Column Lock Control Module -J764- was replaced, it must be activated by selecting the "Replace" function in "Guided Functions". Refer to ⇒ Vehicle Diagnostic Tester.

3 Steering Gear

- ⇒ -3.1 Steering Gear", page 299
- ⇒ -3.2 Tie Rods", page 302
- ⇒ G3.3 ear, Handling and Transporting", page 304
- ⇒ G3.4 ear, Removing and Installing", page 305
- ⇒ R3.5 emoving and Installing", page 307
- ⇒ R3.6 od, Removing and Installing", page 310
- ⇒ R3.7 od End, Removing and Installing", page 313

3.1 Overview - Steering Gear

- ⇒ -3.1.1 Steering Gear, LHD Vehicle", page 299
- ⇒ -3.1.2 Steering Gear, RHD (Not for North American Market)", page 301

3.1.1 Overview - Steering Gear, LHD Vehicle

If the components of the front axle (axle components and/or wheel rim) are replaced if damaged, the tightening specifications on the following threaded connections must be checked, when these threaded connections are not replaced during the repair procedure.

- Testing torque 80 Nm for nut -Item 4- ⇒ Item 4 (page 300) and -Item 15- ⇒ Item 15 (page 301) on the tie rod end -Item 1- ⇒ Item 1 (page 303) and -Item 8- ⇒ Item 8 (page 303).
- ◆ Testing torque 55 Nm for tie rod lock nut -Item 2- ⇒ Item 2 (page 303) and -Item 9- ⇒ Item 9 (page 303).

Until the testing torque is reached in the tightening direction turning of the connection is not permitted.

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1 - Bolt

- Always replace after removing
- □ 70 Nm +90°

2 - Subframe

3 - Power Steering Gear

- ☐ Different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- With integrated Power Steering Control Module -J500- and Steering Angle Sensor -G85-
- Check the Power Steering Control Module -J500- and Steering Angle Sensor -G85- in Guided Fault ing using the ⇒ Vehicle diagnostic tester.
- ☐ The Power Steering Control Module -J500and Steering Angle Sensor -G85- cannot be replaced individually. Replace the steering gear if faulty.
- □ Steering Gear, Removing and Installing. Refer to ⇒ G3.4 ear, Re- moving and Installing", page 305

4 - Nut

- Always replace after removing
- Counterhold on the tie rod end inner contact to prevent it from rotating when tightening.
- □ 20 Nm +90°

5 - Right Wheel Bearing Housing

6 - Heat Shield

□ Depending on the engine installed, there are different versions. Refer to the ⇒ Electronic Parts Catalog (EŤKA).

7 - Bolt

- □ For securing the wire
- □ Depending on the engine installed, three or four are installed. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- □ 6 Nm

8 - Threaded Bushing

Quantity: 2

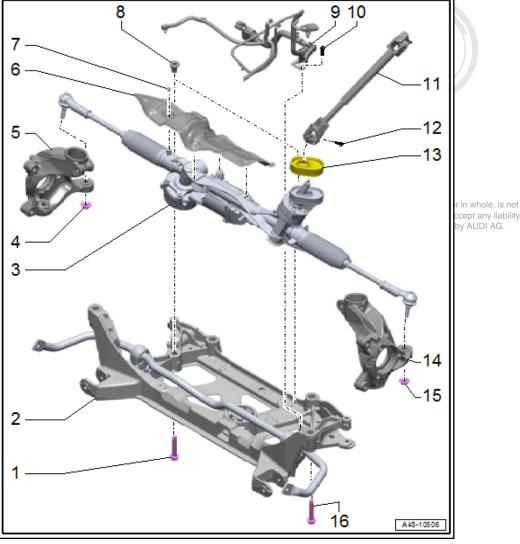
9 - Wire

10 - Expanding Clip

11 - Steering Column

12 - Bolt

- Always replace after removing
- Clean the threaded hole (for example, using a thread tap) before installing the new bolt.



ч	rightening specification. Refer to -item 1- <u>⇒ item 1 (page 287)</u> .
13 - Seal	
	Replace if damaged
14 - Left Wheel Bearing Housing	
15 - Nut	
	Always replace after removing
	Counterhold on the tie rod end inner contact to prevent it from rotating when tightening.
	20 Nm +90°
16 - Bolt	
	Always replace after removing

Overview - Steering Gear, RHD (Not for North American Market) 3.1.2

□ 70 Nm +90°



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1 - Wire

2 - Heat Shield

Depending on the engine installed, there are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).

3 - Bolt

- Depending on the engine installed, three or four are installed. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- □ 8 Nm

4 - Seal

□ Always replace after removing the steering gear.

5 - Steering Gear

- Removing and Instal-G3.4 ear, Removing and Installing", page 3<u>05</u> .
- □ Overview. Refer to ⇒ -3.2 Tie Rods", page
- ☐ There are different versions. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- With Power Steering Control Module -J500-
- Can be checked in "Guided Fault Finding" using the ⇒ Vehicle diagnostic tester.

9 N48-10872

6 - Right Wheel Bearing Housing

7 - Nut

- Always replace after removing
- □ 20 Nm +90°

8 - Subframe

9 - Bolt

- □ Always replace after removing
- □ 70 Nm +90°

10 - Left Wheel Bearing Housing

11 - Expanding Clip

3.2 Overview - Tie Rods

The overview shows a LHD vehicle as an example of For RHD Int. Copying for private or commercial purposes, in part or in whole, is not vehicles the layout is a mirror image. tted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



 Check the dust caps for damage and correct seating

2 - Nut

- When loosening and tightening, counterhold at the tie rod end
- □ 70 Nm

3 - Spring Clamp

4 - Boot

- □ Check for damage
- Must not be twisted after toe is adjusted
- Do not crumple the boot
- Do not bring into contact with hard or sharp objects.
- Grease the sealing locations with Steering d unit Gear Grease -G 052 respe 168 A1-
- Removing and Installing. Refer to ⇒
 R3.5 emoving and Installing", page 307

5 - Clamp

- Always replace after removing
- ☐ Install new clamp using Locking Pliers -VAS 6199-

6 - Tie Rod

- ☐ If faulty, replace with the tie rod end
- □ Removing and Installing. Refer to ⇒ R3.6 od, Removing and Installing", page 310.
- □ 100 Nm

7 - Steering Gear Housing

8 - Left Tie Rod End

Check the dust caps for damage and correct seating

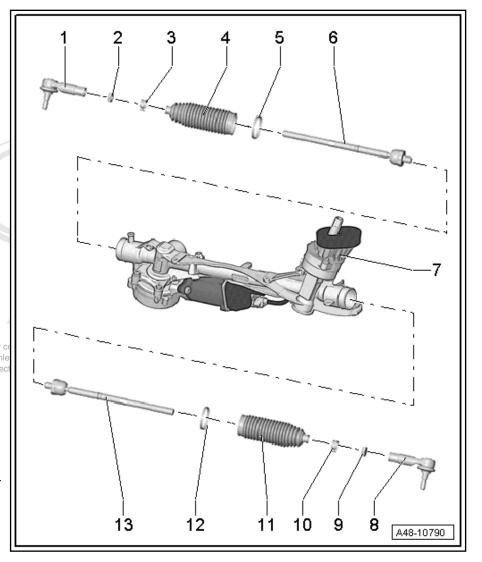
9 - Nut

- ☐ When loosening and tightening, counterhold at the tie rod end
- □ 70 Nm

10 - Spring Clamp

11 - Boot

- Check for damage
- Must not be twisted after toe is adjusted
- □ Do not crumple the boot
- ☐ Do not bring into contact with hard or sharp objects.
- ☐ Grease the sealing locations with Steering Gear Grease -G 052 168 A1-
- ☐ Removing and Installing. Refer to ⇒ R3.5 emoving and Installing", page 307.



12 - Clamp

- Always replace after removing
- ☐ Install new clamp using Locking Pliers -VAS 6199-

13 - Tie Rod

- ☐ If faulty, replace with the tie rod end
- Removing and Installing. Refer to ⇒ R3.6 od, Removing and Installing", page 310.
- ☐ 100 Nm

3.3 Steering Gear, Handling and Transporting

Special tools and workshop equipment required

Safety Gloves



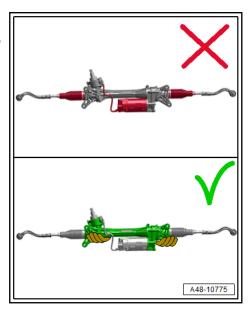
WARNING

Damage to the steering gear poses a safety risk.

The steering gear must always be handled correctly.

Steering Gear, Handling And Transporting Incorrectly

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Transporting at the components colored in "red" causes damage to the steering gear.

- Boot: damaged when pressed, grabbed, or placed on hard surfaces.
- Engine: treating harshly or placing on hard surfaces may damage the connectors and/or wires.

The steering gear must not be under any mechanical load:

A steering gear that has fallen onto a hard surface or shows any sign of damage must not be installed in the vehicle.

Steering Gear, Handling And Transporting Correctly



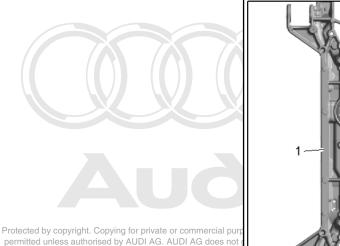
WARNING

Risk of injuring the hands.

- ♦ Wear safety gloves.
- Transport the steering gear using both hands.
- Only grab the steering gear at the areas colored in "green".

3.4 Steering Gear, Removing and Instal-

Removing



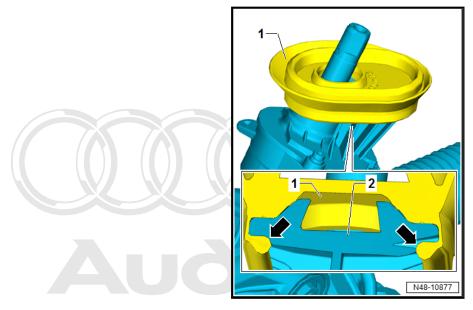
- permitted unless authorised by AUDI AG. AUDI AG does not with respect to the correctness of information in this docur
- Remove the subframe with the steering gear. Refer to ⇒ w2.5 ith Steering Gear, Removing and Installing", page 38
- Remove the bolts -arrows-.
- Remove the steering gear -2- from the subframe -1-.

Installing

Install in the reverse order of removal while noting the following:

- Replacing the seal -1-.

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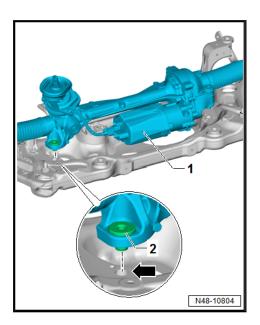


- Fold up the seal -1- over the collar of the steering gears-2-rso cial purposes, in part or in whole, is not that the rubber lip encloses the collar all around Warrows DI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Check the seal -1- for secure fit.
- Coat the seal from above with lubricant for example soft soap.



Note

- After attaching the steering gear to the universal joint, make sure that seal on steering gear is positioned on the mounting plate without any kinks and is sealed correctly. The opening to the footwell must seal correctly. Water leak and/or noises may be the result.
- Make sure sealing surfaces are clean.
- Position the steering gear -1- on the subframe.



The steering gear threaded sleeves -2- must be inserted into the subframe holes -arrow-.

- Position the steering gear bolts.
- Install the subframe with the steering gear. Refer to ⇒ w2.5 ith Steering Gear, Removing and Installing", page 38.



Note

Make sure the ball joint boot is not damaged or twisted.

- After installing the used or new steering gear, the Steering Angle Sensor -G85- must be calibrated to the "basic setting" function using the ⇒ Vehicle diagnostic tester.
- If new steering gear was installed, the Power Steering Control Module -J500- must be activated in the "Replace control module" function using the ⇒ Vehicle diagnostic tester.
- If the steering gear was removed and reinstalled, a road test must be done to check the steering wheel position. If the steering wheel is crooked, then an axle alignment must be performed. Refer to ⇒ A2 lignment", page 256.
- If a new steering gear was installed, an axle alignment must ate or commercial purposes, in part or in whole, is not be performed. Refer to ⇒ A2 lignment titrpage 256 pised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Tightening Specifications

Refer to ⇒ -3.1 Steering Gear", page 299

3.5 Boot, Removing and Installing

Special tools and workshop equipment required

♦ Hose Clip Pliers -V.A.G 1275A-



◆ Torque Wrench, 40-200Nm -V.A.G 1332A-





Locking Pliers -VAS 6199-



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Removing

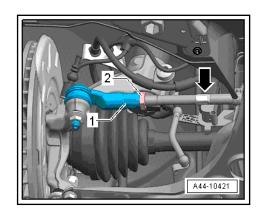


Caution

There is a risk of destroying the steering gear from moisture and dirt getting inside when the boot is faulty.

- A visible film of grease present on the steering rack near the splines. If the film of grease is missing, replace the steering gear.
- Dirt must not enter through the faulty boot or get into the open steering gear when cleaning the steering gear and surrounding components, when removing the steering gear components or when greasing the steering gear.
- Follow the guidelines for clean working conditions. Refer to ⇒ f3.7 or Clean Working Conditions", page 8.
- Turn the steering wheel into straight ahead position.
- Remove the wheel. Refer to ⇒ a1 nd Tires", page 255.
- Clean outside of steering gear in area of boot.
- While doing this, no dirt must enter the steering gear through the faulty boot.
- Mark the location of the nut -2- on the tie rod.





- Loosen the nut -2- while counterholding the tie rod end -1-.
- Loosen the spring clamp -Item 10- <u>⇒ Item 10 (page 303)</u> from the boot using the Hose Clip Pliers -V.A.G 1275A- and slide onto the tie rod.
- Remove the clamp -Item 5- ⇒ Item 5 (page 303) and pull the boot off of steering gear housing.
- or commercial purposes, in part or in whole, is not Now twistitie rod outrofitie rod/endUDI AG does not guarantee or accept any liability ion in this document. Copyright by AUDI AG.
- Remove the nut from the tie rod.
- Pull off the boot with spring clamp from tie rod.

Installing

Install in the reverse order of removal while noting the following:

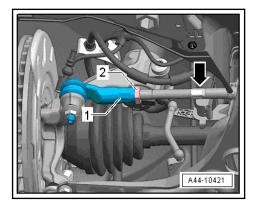
Replace the boot after removal.



Caution

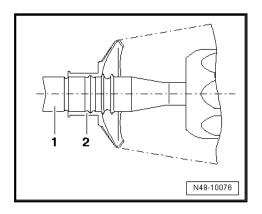
Risk of damaging the boot due to improper handling.

- ◆ Do not crush the boot folds.
- Do not bring the boot into contact with hard or sharp objects.
- Check the seating of the boot on the steering gear for damage. Replace the steering gear if the seal seat is damaged.
- Turn the steering wheel into straight ahead position.
- Guide new clamp and boot onto the tie rod.
- Install the tie rod up to the marking made during removal.

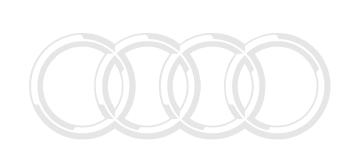


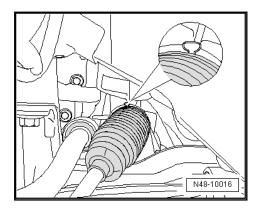
Tighten the lock nut -2- to tightening specification, while counterholding on tie rod end -1-.

- Lightly grease the sealing surface of the boot to the tie rod with grease from the repair kit.
- Slide the boot -2- onto tie rod -1- as shown.



- Secure the spring clamp on the boot using Hose Clip Pliers -V.A.G 1275A-.
- Lightly grease the sealing surface of the boot to the steering gear housing with grease from the repair kit.
- Slide the boot onto steering gear housing.





- Tighten the new clamp using the Locking Pliers -VAS 6199to the extent shown.
- Perform a vehicle alignment. Refer to ⇒ A2 lignment", page 256 tected by copyright. Copying for private or commercial purposes, in part or in whole, is not
- permitted unless authorised by AUDI AG. AUDI AG does not quarantee or accept any liab Performs the basic setting for the Steering Angle Sensorudi Ag. -G85- using the ⇒ Vehicle diagnostic tester.
- Perform a basic setting to the steering using the ⇒ Vehicle diagnostic tester.

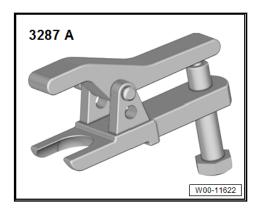
Tightening Specifications

- Refer to ⇒ -3.2 Tie Rods", page 302
- ◆ Refer to ⇒ a1 nd Tires", page 255

Tie Rod, Removing and Installing

Special tools and workshop equipment required

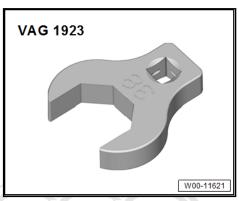
◆ Puller - Ball Joint -3287 A-



♦ Torque Wrench, 40-200Nm -V.A.G 1332A-



◆ Torque Wrench Insert - Open Jaw -V.A.G 1923-

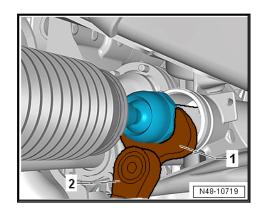


Removing

- Remove the boot. Refer to ⇒ R3.5 emoving and Installing", page 307
- Turn the steering as follows:
- For the left tie rod, turn the steering wheel all the way to the
- ♦ For the right tie rod, turn the steering wheel all the way to the left
- Remove the tie rod.

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- Torque Wrench Insert Open Jaw -V.A.G 1923-
- Torque Wrench, 40-200Nm -V.A.G 1332A-



Caution

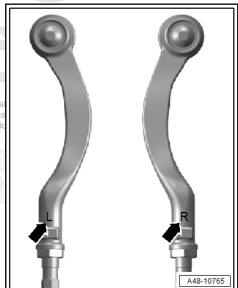
Risk of destroying the steering gear with entering moisture and dirt with a faulty boot.

- ♦ Check the splines on the steering rack for a visible lubricating film.
- If the film of grease is missing, replace the steering gear.

Installing



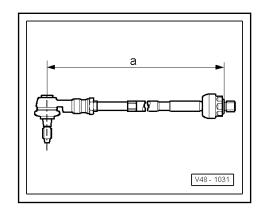
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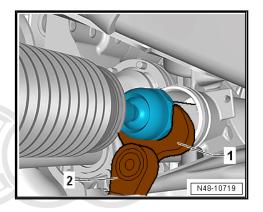
Make sure the correct tie rod end is installed on each side.

Identification -arrows-:

- L Left Tie Rod End
- R Right Tie Rod End
- Turn the steering wheel in the straight position.
- Guide new clamp and boot onto the tie rod.
- Twist tie rod far enough into tie rod end until dimension -a- is obtained.



- Dimension -a- = $373 \pm 1 \text{ mm} (14.69 \pm 0.04 \text{ in.}).$
- Twist the tie rod into steering gear and tighten to tightening specification.



- Torque Wrench Insert Open Jaw -V.A.G 1923-
- Torque Wrench, 40-200Nm -V.A.G 1332A-

Install in reverse order of removal. Note the following:

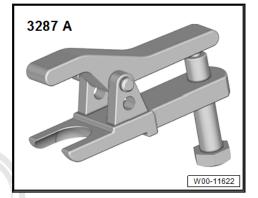
- Install the boot. Refer to ⇒ R3.5 emoving and Installing", page 307
- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not Perform a vehicle alignment. Refer to a lignment of accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG. <u> 256</u> .
- Perform the basic setting for the Steering Angle Sensor -G85- using the ⇒ Vehicle diagnostic tester.
- Perform a basic setting to the steering using the ⇒ Vehicle diagnostic tester.

Tightening Specifications

- ◆ Refer to ⇒ -3.2 Tie Rods", page 302
- Refer to ⇒ -3.1 Steering Gear", page 299

3.7 Tie Rod End, Removing and Installing

Special tools and workshop equipment required



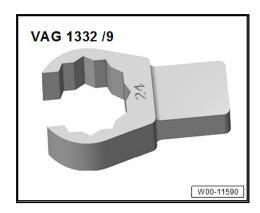
Torque Wrench, 40-200Nm -V.A.G 1332A-



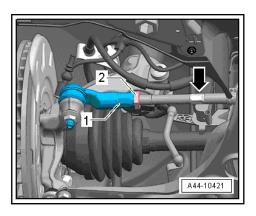
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Torque Wrench 1332 Insert - Open Ring Wrench - 24mm -V.A.G 1332/9-



Removing

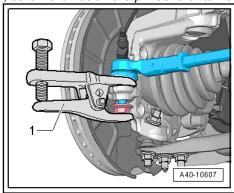


- Turn the steering wheel in the straight position.
- Remove the front wheel. Refer to <u>⇒ a1 nd Tires</u>", page 255.
- Loosen the nut -2- while counterholding the tie rod end -1-.

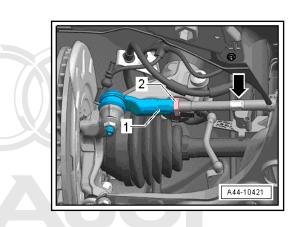


Note

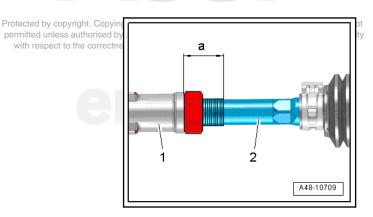
To protect the thread, screw the nut on the pin several turns.



- Loosen the nut from the tie rod end, but do not remove it yet.
- Press off the tie rod end from the wheel bearing housing using the Puller - Ball Joint -3287A- -item 1- and then remove the nut.
- Remove the tie rod end -1- from the tie rod while counterholding on the tie rod hex fitting -arrow- if necessary.



Tie Rod End, Installing



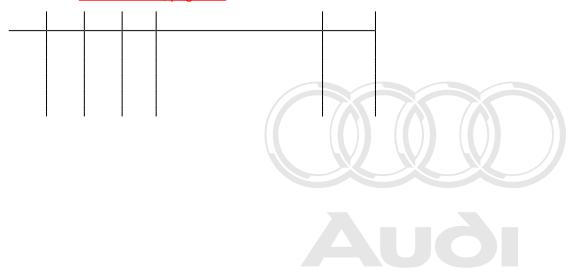
- Install the tie rod end -1- on the tie rod -2-.
- The dimension -a- must be the same on the right and left tie rod end.
- The maximum permitted difference between the right and left < 2 mm.

Install in reverse order of removal. Note the following:

Perform a vehicle alignment. Refer to ⇒ A2 lignment", page <u>256</u> .

Tightening Specifications

- ♦ Refer to ⇒ -3.2 Tie Rods", page 302
- Refer to ⇒ -3.1 Steering Gear", page 299
- Refer to ⇒ a1 nd Tires", page 255



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Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described
 in this manual, we suggest you leave such repairs to an authorized Audi retailer or other
 qualified shop. We especially urge you to consult an authorized Audi retailer before beginning
 repairs on any vehicle that may still be covered wholly or in part by any of the extensive
 warranties issued by Audi.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Audi is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Audi retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Audi Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the
 purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may
 crumble under continuous load. Never work under a vehicle that is supported solely by a jack.
 Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of
 injury to yourself and others if you are tired, upset or have taken medicine or any other
 substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.

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with respect to the correctness of information in this document. Convining engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.

Cautions & Warnings

- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are
 designed to be used only once and are unreliable and may fail if used a second time. This
 includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the
 recommendations in this manual replace these fasteners with new parts where indicated,
 and any other time it is deemed necessary by inspection.
- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not
 create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing
 asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as
 asbestosis or cancer, and may result in death.

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- Finger rings should be removed so that they cannot cause electrical shorts get caught in document. Copyright by AUDI AG. AUDI AG does not guarantee or accept any liability running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand.
 Read all the instructions thoroughly, do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Audi specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these
 tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten
 fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping
 hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame.
 Excessive heat will increase system pressure and may cause the system to burst.

Cautions & Warnings

- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Audi Service technicians should test, disassemble or service the airbag system.
- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not
 exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute
 before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only
 be tested by trained Audi Service technicians using the Audi Factory Approved Scan Tool (ST)
 or an approved equivalent. The airbag unit must never be electrically tested while it is not
 installed in the vehicle.

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- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.